

**U.S. Department of the Interior
Bureau of Land Management**

**ENVIRONMENTAL ASSESSMENT
Hay Creek (phase 1) Grazing Permit**

July 2016



PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Worland Field Office

Environmental Assessment

Introduction

Identifying Information:

Title, EA number, and type of project:

Hay Creek (phase 1) Grazing Permit

EA number DOI-BLM-WY-R010-2016-0009-EA

New grazing permit

General Location of Proposed Action: The area of consideration is located approximately 20 miles northwest of Thermopolis, Hot Springs County, Wyoming in various sections of T. 44 N., R. 99 W.; T. 44 N., R. 98 W.; T. 44 N., R. 97 W.; T. 44 N., R. 96 W.; T. 44 N., R. 95 W.; T. 45 N., R. 98 W.; T. 45 N., R. 97 W.; and T. 45 N., R. 96 W.

Name and Location of Preparing Office:

Worland Field Office

101 S. 23rd St.

Worland, WY 82401

Lease/Serial/Case file number:

To Be Established

Applicant Name:

Hay Creek Land and Cattle Co., LLC

Background Information:

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of issuing a new grazing permit for the Coal Draw #00574, East Cottonwood #00534, West Cottonwood #00535, Wagonhound #00596, and Wagonhound Bench #00573 allotments (See Appendix 1 for a map of the allotments). Hay Creek Land and Cattle Co. LLC (Hay Creek) applied for the grazing privileges on these allotments and has been determined to be a qualified applicant (4110.1 (b)). Grazing has not been authorized on these allotments since about 2006.

The Worland Field Office performs Rangeland Health Assessments using Technical Reference 1734-6 "Interpreting Indicators of Rangeland Health" to determine if Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Land Administered by the Bureau of Land Management in the State of Wyoming (S&Gs) approved August 12, 1997 are being met. Field work to determine S&Gs was completed for these allotments in 2014 with the subsequent determinations signed in 2015. Through the S&Gs it has been determined that there are acres in the allotments that are not meeting rangeland health standards and acres that are meeting rangeland health standards. These Rangeland Health Determinations are posted at <http://www.blm.gov/wy/st/en/info/NEPA/documents/wfo/rhealth.html>.

Purpose and Need for Action:

The purpose of this action is to analyze the issuance of new grazing permits for the above mentioned allotments within the Worland Field Office with appropriate terms and conditions to promote rangeland health (based upon potential of site). The purpose of this EA is to determine the amount of permitted use based on current resource conditions, season of use, type of livestock, and under what terms and conditions would be applied to grazing management for the grazing permits.

The need for this action is BLM's responsibility to issue grazing permits in accordance with the provisions of the Taylor Grazing Act, Federal Land Policy and Management Act, Public Rangelands Improvement Act, Administrative Procedures Act, Worland Resource Management Plan (WRMP 2015) and the grazing regulations 43 CFR 4100.

Decision to be Made

The Authorized Officer (AO) must determine whether or not to issue a grazing permit to the applicant. If a permit is issued the AO must identify specific terms and conditions that apply to the permit to achieve management and resource condition objectives for the public lands.

Conformance

This plan has been reviewed to determine if the proposed action conforms to the land use plan as required by 43 CFR 1610.5. The proposed action conforms to the Record of Decision and Approved Resource Management Plan for the Worland Field Office, dated September 21, 2015. The decisions in the WRMP provide general management direction and allocation of uses and resources on the public lands in the area.

Livestock Grazing Management Goals and Objectives	
Goal LR: 10 - Continue ecosystem benefits of herbivory by providing opportunities for livestock grazing to support and sustain local communities consistent with goals and objectives of other resources and overall land health.	
Objectives-	
LR: 10.1 Manage livestock grazing consistent with multiple-use needs, sustained yield, and the Wyoming Standards for Healthy Rangelands (BLM 1997). Adjust management based on assessments and evaluations.	
LR: 10.2 Provide for the establishment of voluntary reserve common allotments as opportunities arise within the planning area to facilitate rangeland restoration, recovery, and management objectives (in accordance with existing policy, WO IM 2013-184).	
LR: 10.3 Manage levels of livestock use in a manner that strives to maintain or restore permitted use based on forage availability consistent with multiple use.	
Record Number	Management Action
Livestock Grazing Management	
6206	The planning area is open to livestock grazing except in areas specifically closed to grazing, such as: <ul style="list-style-type: none">• Bighorn River tracts (1,444 acres)• Campgrounds (273 acres)

	<ul style="list-style-type: none"> • Exclosures (113 acres) <p>Manage livestock grazing to support other resource objectives and allow livestock grazing in areas closed to grazing as a tool to maintain or improve resource conditions.</p> <p>Mitigate new resource uses to minimize or avoid conflicts with livestock grazing where appropriate.</p>
6198	<p>In cooperation, consultation, and coordination with permittees/lessees, cooperators, and interested public, develop and implement appropriate livestock grazing management actions to enhance land health, improve forage for livestock, and meet other multiple use objectives by using the Wyoming Guidelines for Livestock Grazing Management, other appropriate BMPs (see Appendix C, Required Design Features and Best Management Practices (p. 251)), and development of appropriate range improvements. The BLM will prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of grazing permits/leases in PHMAs. In setting workload priorities, precedence will be given to existing permits/leases in areas not meeting Land Health Standards, with focus on allotments containing riparian areas or wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (e.g., wildfire) and legal obligations.</p> <p>The BLM will collaborate with appropriate federal agencies, and the State of Wyoming as contemplated under Governor EO 2013-3 (Wyoming Office of the Governor 2013), to 1) develop appropriate conservation objectives; 2) define a framework for evaluating situations where Greater Sage-Grouse conservation objectives are not being achieved on federal land, to determine if a causal relationship exists between improper grazing (by wildlife or wild horses or livestock) and Greater Sage-Grouse conservation objectives; and 3) identify appropriate site-specific actions to achieve Greater Sage-Grouse conservation objectives within the framework.</p>
6202	<p>Utilize a rangeland health assessment, resource monitoring, or analysis to determine if livestock grazing adjustments in amounts, kinds, or season are necessary. The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMAs will include specific management thresholds based on Greater Sage-Grouse Habitat Objectives Table (Table 2.7, "Greater Sage-Grouse Seasonal Habitat Objectives" (p. 22)) and Land Health Standards (43 CFR 4180.2) and one or more defined responses that will allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis. Greater Sage-Grouse Habitat Objectives Table (Table 2.7, "Greater Sage-Grouse Seasonal Habitat Objectives" (p. 22)), Land Health Standards (43 CFR 4180.2) and ecological site potential, and one or more defined responses that will allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis.</p>
6214	<p>Allotments within PHMAs, focusing on those containing riparian areas, including wet meadows, will be prioritized for field checks to help ensure compliance with the terms and conditions of the grazing permits (Appendix O, Livestock Grazing (p. 565)). Field checks could include monitoring for actual use, utilization, and use supervision.</p>
Vegetation - Grassland and Shrubland Communities	
4027	<p>Manage native plant communities (Map 3-15) in accordance with <i>Wyoming Standards for Healthy Rangelands</i> (BLM 1997). Use ESDs and other available information, resource objectives established in this RMP, and specific management</p>

	practices to maintain or achieve the standards.
4029	<p>Manage to achieve or make progress toward the appropriate community phase for the site. In plant communities determined to be meeting Wyoming Standards for Healthy Rangelands, manage to maintain or improve those communities.</p> <p>Potentially manage some areas for a higher plant community state or phase (based on state and transition models in ESDs) where site-specific management objectives determine that a higher plant community state or phase is desirable. In these areas the desired plant community states or phases will be determined on a site-specific basis at the implementation level.</p> <p>Manage areas at a lower level of ecological status to provide preferred habitat for wildlife species with unique habitat requirements on a case-by-case basis.</p>
4030	Manage to maintain contiguous blocks of native plant communities and minimize fragmentation; allow for appropriate mosaic of interrelated plant communities while allowing for other resource uses.
Fish and Wildlife Resources - Wildlife	
4058	Maintain or improve important wildlife habitats through vegetative manipulations, habitat improvement projects, livestock grazing strategies and the application of The Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management (Wyoming Interagency Vegetation Committee 2002) and the Wyoming BLM Standard Mitigation Guidelines for Surface-Disturbing and Disruptive Activities (Appendix F, Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities (p. 351)), BMPs (Appendix C, Required Design Features and Best Management Practices (p. 251)), and similar guidance updated over time.
Fish and Wildlife Resources – Special Status Species – Sage-grouse	
4099	In cooperation with stakeholders, manage to promote the growth and persistence of native shrubs, grasses, and forbs needed by Greater Sage-Grouse for seasonal food and concealment.
4112	In PHMAs, implement mitigation and minimization guidelines and required design features, including specific measures for Greater Sage-Grouse (refer to Appendix C, Required Design Features and Best Management Practices (p. 251)) as applicable and consistent with EO 2015–4 (Wyoming Office of the Governor 2015). Incorporate Greater Sage-Grouse specific measures into project proposals as required design features or mitigation for any authorized federal action, regardless of surface ownership.
Biological Resources- Vegetation- Riparian/Wetland Resources	
4035	Manage all riparian/wetland areas to meet or make progress towards PFC giving priority to those areas that are functioning at risk with a downward trend or that are in non-functioning condition, plus manage streams with unique recreational or aquatic values to obtain PFC.

Relationship to Statutes, Regulations, Plans or Other Environmental Analysis:

This Environmental Assessment is being prepared in accordance with Washington Office (WO) Instruction Memoranda WO-IM-99-039 and 2000-022 as well as WY-IM-2000-20, which instruct all Bureau of Land Management (BLM) Field Offices to conduct National Environmental Policy Act (NEPA) review on grazing permit renewals. The primary regulations governing the analysis are 40 CFR

1500 (RE: The President's Council on Environmental Quality implementing regulations for procedural provisions of NEPA). The principal Bureau permitting regulations for livestock grazing are found in 43 CFR 4100. The principal statutes governing livestock grazing on public land are the Taylor Grazing Act of 1934, the Federal Land Policy and Management Act of 1976, and the Public Rangelands Improvement Act of 1978.

This action is in accordance with the following Grazing Management Regulations: 43 CFR 4110.3 and 43 CFR 4180

- “The authorized officer shall periodically review the permitted use specified in a grazing permit or lease and shall make changes in permitted use as needed to manage, maintain or improve rangeland productivity, to assist in restoring ecosystems to properly functioning condition, to conform with land use plans or activity plans, or to comply with the provisions of subpart 4180 of this part. These changes must be supported by monitoring, field observations, ecological site inventory or other data acceptable to the authorized officer.”
- “The authorized officer shall take appropriate action under subparts 4110, 4120, 4130, and 4160 of this part...upon determining that existing grazing management needs to be modified...”

This action is also subject to national level BLM and Wyoming BLM policy regarding Greater Sage-Grouse Habitat Management found in the following Instruction Memoranda: WO-IM-2012-043 and WY-IM-2012-019.

- “To ensure that the NEPA analysis for permit/lease renewal has a range of reasonable alternatives:”
 - “Include at least on alternative that would implement a deferred or rest-rotation grazing system, if one is not already in place and the size of the allotment warrants it.”
 - “Include a reasonable range of alternatives (e.g., no grazing or a significantly reduced grazing alternative, current grazing alternative, increased grazing alternative, etc.) to compare the impacts of livestock grazing on Greater Sage-Grouse habitat and land health from the proposed action.”

Scoping, Public Involvement and Issues:

Scoping

The scoping process for the Grazing Permit EA began with a review of the proposed action by an interdisciplinary team. The applicant for the action was consulted on alternative development and livestock management. The applicants and interested publics were given the opportunity to be involved in the S&G process.

On October 1, 2015 a Scoping Notice was sent to the applicant and interested publics, and posted on the internet and in the local newspapers. The notice was seeking identification of potential issues and alternatives. Comments were received from Wyoming Stock Growers Association, Wyoming Game and Fish Department, Wyoming Wild Sheep Foundation, and Wyoming Department of Agriculture. These comments and any substantive issues have been incorporated into the range of alternatives and issues identified within the document.

Issues Identified

Cultural

How would issuing a permit for livestock grazing affect cultural resources eligible or unevaluated for the NRHP?

Range Administration

How would the proposed action and other alternatives impact the range administration on the allotment?

Native Vegetation

How would the proposed action and other alternatives affect the vegetation's ability to maintain meeting or progress towards meeting Rangeland Health Standard 3: Upland vegetation on ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance?

Wildlife

How would the proposed action and other alternatives affect important habitats used by mule deer, antelope, and sagebrush obligate birds like the sage-grouse, as related to rangeland health Standard 4? "Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced."

Soils/Hydrology

How would the issuance of a grazing permit impact the soil and water resources as related to rangeland health Standard 1? "*Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.*"

If a change in runoff were to occur as a result, what would be the impact to water quality from a new grazing permit in the watershed of the allotment? (Rangeland Health Standard 5)

How would the issuance of a grazing permit impact the functioning condition of the riparian/wetland areas as related to rangeland health Standard 2? "*Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge*".

Proposed Action and Alternatives

The alternatives were developed based upon the proposals from the applicants and BLM Policy Instruction Memorandums: WY-IM-2000-020, WO-IM-2012-043, and WY-IM-2012-019. The alternatives were developed to address the grazing impacts on public lands within the allotments, to consider the permittee's ranching resource goals and operations, and to provide the opportunity for specific comparisons on which the decision maker could base a decision. Table 1 outlines the alternatives.

Table 1. Grazing Permit Terms and Conditions for considered alternatives								
Alternative	Allotment	Number of Animals	Kind	Season of Use	%Public Land	Active AUMs	Suspended AUMs	Total Preference AUMs
Proposed Action*	Coal Draw	625	Sheep	3/1-3/31	67	85	0	459
				10/16-2/28	67	374	0	
	East Cottonwood	122	Cattle	3/1-3/31	46	57	0	308
				10/16-2/28	46	251	0	
	Wagonhound							
	West Pasture	167	Cattle	3/1-3/31	78	133	0	715
				10/16-2/28	78	582	0	
	Middle Pasture	131	Cattle	3/1-3/31	47	63	0	338
				10/16-2/28	47	275	0	
	East Pasture	248	Cattle	3/1-3/31	37	94	0	504
				10/16-2/28	37	410	0	
No Action/No Grazing	Coal Draw	0	n/a	n/a	n/a	0	0	0
	East Cottonwood	0	n/a	n/a	n/a	0	0	0
	West Cottonwood	0	n/a	n/a	n/a	0	0	0
	Wagonhound	0	n/a	n/a	n/a	0	0	0
	Wagonhound Bench	0	n/a	n/a	n/a	0	0	0

* See Appendix C for other terms and conditions

Description of Alternatives Analyzed in Detail:

Description of the No Action/No Grazing Alternative:

The No Action is considered the same as the No Grazing for this EA because there are currently no grazing permits associated with these allotments. Under the no action/no grazing alternative, livestock grazing would not be permitted on these allotments, approximately 28,651 public land acres. The grazing permit would not be issued to the applicant. The grazing preference for the allotment would be removed from the WRMP which would require an amendment of the WRMP. This action does not meet the

Purpose and Need, but is considered to provide a full range of alternatives in accordance with WO-IM-2000-022.

Description of the Proposed Action:

Under the Proposed Action a grazing permit would be issued to Hay Creek Land and Cattle Company, LLC for 5 years as outline in Table 1. The Proposed Action would include combining the West Cottonwood, Wagonhound, and Wagonhound Bench allotments into one allotment named the Wagonhound allotment. This new Wagonhound allotment would consist of three pastures: West, Middle, and East. The East Cottonwood and the Coal Draw Allotments would remain as individual allotments- See Appendix 3 for a map of the proposed allotment and pasture name changes.

The permits would account for 2,324 active public land AUMs amongst the 3 allotments. Grazing use by cattle would be permitted in the East Cottonwood allotment and in the Wagonhound allotment, while in the Coal Draw Allotment use would be made by either sheep or cattle.

The amount of active AUMs would be based on suitability/expected use following the guidelines of Holechek et. al. for grazing use based on slope and distance from water sources (2011). Then the suitable acres would be stocked for a targeted use of 45% use of the current year's growth while the Ecological Site Descriptions recommend a stocking rate based upon a 50% use level.

Grazing use would take place from October 16 through March 31, the dormant season, as outlined in Table 1. The permit would incorporate the other terms and conditions as found in Appendix C. These terms and conditions would allow cattle or sheep use in the Coal Draw allotment, but not during the same annual season (only 1 kind of livestock would be allowed annually); would allow livestock numbers to vary during the season as long as Active AUMs are not exceeded; and incorporates a 50% utilization threshold that would require a management change to reduce grazing use if that threshold is exceed in two consecutive years of use.

Design Features and Best Management Practices

The action, as proposed and described above, would follow the BMP's for livestock grazing within Appendix C of the Worland Field Office ARMP. Pertaining to sagegrouse habitats: there are no new range improvements proposed within this document, nesting and brood rearing habitats would be maintained or improved through the appropriate stocking rates and season of use, riparian areas will not be impacted during the hot season (winter use proposed) and heavy use is not prescribed by the proposed action-conservative to moderate use is. As pertaining to the vegetative community, recent monitoring has been conducted to define the ecological states within the allotments. Thereby, allowing a proper stocking rate and season of use to be proposed to ensure that those sites capable of improving are given the opportunity while those sites with limited capabilities are given the opportunity to maintain their current ecological state.

Alternatives Considered but not Analyzed in Detail:

It was considered to permit only cattle use in the Coal Draw #00574, East Cottonwood #00534, West Cottonwood #00535, Wagonhound #00596, and Wagonhound Bench #00573 allotments; however, this proposal does not meet the type of use that was applied for by Hay Creek Land and Cattle Company. Therefore, it is not further analyzed.

Affected Environment and Environmental Effects

This chapter characterizes the resources and uses that have the potential to be affected by the proposed action, followed by a comparative analysis of the direct, indirect and cumulative impacts of the alternatives. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative impacts result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions.

Introduction

General Setting and Geographic Scope of the Project Area

The Coal Draw, East Cottonwood, West Cottonwood, Wagonhound, and Wagonhound Bench allotments lie in Hot Springs County, Wyoming. The allotments range from the 5-9 inch precipitation zone into the lower end of the 10-14 inch precipitation zone. The Wagonhound and Prospect Creek precipitation gauges show an 8.5 inch average over a 37 year period. The topography varies but is generally broad benches adjacent to Cottonwood Creek and rolling hills that are abutted with steep, cliff like faces. Elevation varies from about 4,500 feet in Coal Draw to 6,200 feet in Wagonhound.

There are 6,551 acres in Coal Draw, 3,415 acres in East Cottonwood, 7,061 acres in West Cottonwood, 3,453 acres in Wagonhound Bench, and 8,171 acres in Wagonhound that is BLM administered public land using data from the 2015 S&G Determinations. There is a total of 28,651 acres.

Resources Carried Forward for Analysis

Cultural Resources

Issue(s) Identified

How would issuing a permit for livestock grazing affect cultural resources eligible or unevaluated for the NRHP?

Affected Environment

The area of potential effect (APE) was defined for the current undertaking as the BLM managed public land acres within the Hay Creek Phase I Allotments (Coal Draw, East Cottonwood, West Cottonwood, Wagonhound Bench, and Wagonhound). To evaluate potential effects to historic properties (cultural resources eligible or unevaluated for the National Register of Historic Places) a literature review was completed of the entire allotments and portions of each allotment were inventoried at the class II or reconnaissance level. Consultation occurred with the State Historic Preservation Office (SHPO) under the Wyoming State Protocol between the BLM and SHPO (State Protocol). SHPO concurrence was received on the APE and the level of inventory for the undertaking.

Table 2. Summary of Cultural Resource Sites within Hay Creek Phase I Allotments.

Allotment	Not Eligible Sites	Eligible Sites	Unevaluated Sites	Total Historic Properties
Coal Draw	6	10	11	21
East Cottonwood	8	3	1	4
West Cottonwood	11	6	6	12
Wagonhound Bench	3	2	0	2
Wagonhound	6	0	4	4
Total:	34	21	22	43

Results of the file search indicate between 2 and 14 % of the each allotment has been inventoried for cultural resources at the class III level. Those surveys and the additional reconnaissance inventory recorded 77 cultural resource sites within the Hay Creek Phase I allotments. Of those sites 21 are eligible for the National Register of Historic Places (NRHP), 22 are unevaluated, and the remaining sites are not eligible (Table 2). Typical for the region, the site types identified include prehistoric open camps and lithic scatters, historic debris, historic roads and trails, historic oil field, historic mine, prehistoric petroglyphs, and cairns.

Direct and Indirect Effects

No Action

Under the No Action/No Grazing Alternative, grazing permits would not be issued for the allotments. A review of the historical records on file at the Worland Field Office indicate that the Coal Draw, East Cottonwood, West Cottonwood, Wagonhound Bench, and Wagonhound allotments are not eligible for the National Register of Historic Places (36CFR§60.4(a) and (b)). No resulting effects on cultural resources would be expected to occur beyond the current situation.

Proposed Action

Following policy provided in Instruction Memorandum (IM) WO-99-039, IM WY-99-020, BLM Manual 8100 series, and the State Protocol a literature review was conducted of the allotments using SHPO and BLM records (BLM Cultural Project #010-2015-080, -081, -082, -083, and -084). In addition to the literature review, a class II cultural resource inventory was conducted within portions of each allotment to identify potential effects to historic properties. The location of the inventory blocks was determined by overlaying high probability areas for cultural resources with known or potential livestock concentration areas. Also, because historic livestock grazing was listed as a factor for why acres within the allotment did not meet Rangeland Health Standards, focus was placed on known or potential livestock concentration areas within not met acres for additional analysis.

Research indicates affects to historic properties are most probable in high use areas where livestock congregate (Osborn et al 1987). Within concentration areas trampling could modify a site assemblage through breakage, chipping, and or displacement (Nielsen 1991). Concentration areas can include artificial water sources (i.e. reservoirs and other range improvement projects), salt/mineral block locations, and corrals. In allotments used during the winter months sheltered areas with a southern exposure such as rockshelters and cliff faces can also become concentration areas. Outside concentration areas, livestock are dispersed and it can be predicted that impacts will be surficial or absent (BLM 1999). Because the allotment will be utilized in the winter months, potential livestock concentration areas were narrowed down to cliff faces with a southern aspect. Reservoirs and wells were eliminated from additional analysis. Existing range improvements projects are considered an existing disturbance. After a determination by a cultural resource specialist, undertakings within previously disturbed areas are generally exempt from inventory (State Protocol V.B.iv).

A total of approximately 815 acres were inventoried at the reconnaissance level between the five allotments. Results of the literature search and reconnaissance inventory indicate that the Hay Creek Phase I Allotments contain 43 historic properties. Ten historic properties were monitored or recorded during fieldwork in 2015 and an addition 10 were monitored or recorded within the last five years. All are located in or near areas suitable for livestock grazing but do not show evidence of concentrated use. Manure was observed in or near the sites indicating use of the area but no adverse effects (e.g. rubbing or surface disturbance) from livestock grazing was documented. Under current policy no additional analysis of known cultural resource sites is required.

In regards to unidentified historic properties, there is a direct relationship between the rangeland health and potential effects to cultural resources (BLM 2006). Provided rangelands remain in satisfactory

condition and are not overgrazed, it is anticipated dispersed livestock grazing outside concentration areas will have no adverse effect on historic properties. Rangeland deterioration could constitute a viable threat to historic properties. Any and all future range development projects within the allotments will comply with the State Protocol, are subject to relevant cultural investigations prior to permit issuance, and will be analyzed under a separate and site specific EA.

The proposed action will not affect historic properties. No adverse effects are occurring to known historic properties. No known historic properties are located within known livestock concentration areas.

Mitigation

In addition to the standard cultural stipulations, a stipulation indicating avoidance areas for salt and mineral blocks will be added to the terms and conditions of the grazing permit for the Coal Draw Allotment. Prohibiting the placement of mineral blocks near the high probability area for cultural resources could help prevent the creation of concentration areas.

Because livestock grazing is a dynamic ongoing process, cultural resource specialists, in conjunction with BLM range management and the permittee, will periodically monitor and inspect heavy use areas and cultural resource sites following current policy (Bighorn Basin RMP and BLM Manual 8100 series). Any adverse effects discovered will be mitigated in accordance with the State Protocol. Standard cultural stipulations apply and are included as a term and condition of the grazing permit.

Cumulative Effects

Since there would be no direct or indirect effects on known historic properties, there can be no cumulative effects.

Range Administration

Issue(s) Identified

How would the proposed action and other alternatives impact the range administration in the allotment?

Affected Environment

Livestock grazing in the area has likely occurred since prior to the passing of the Taylor Grazing Act in 1934. For the purpose of this analysis historic grazing use is being described as the period of time when livestock were initially introduced into the area, pre-1934 to the early 2000s when the last authorized grazing use was made. There has been no authorized livestock grazing on the allotment for at least ten years.

Estimated Carrying Capacity-common to all allotments

The information from the vegetative portion of the Rangeland Health Assessments, the appropriate stocking rate prescribed by Natural Resources Conservation Service (NRCS) Ecological Site Descriptions (ESDs) and defining suitability of acres, as appropriate to cattle/sheep, were used to develop an estimated carrying capacity.

The rangeland health assessments do define the current range conditions by ecological state which then were accurately compared to the ESDs to establish the prescribed stocking rate. The suitability of public lands is defined by slopes and distances from water. Steeper slopes reduce the suitability for grazing as does distance from water. In the case of winter sheep grazing, the distance from water is less important as sheep will utilize snow as a water source more efficiently than cattle.

See Appendix B of this document for a detailed Suitability/Carrying Capacity spreadsheet. The ESD's prescribed stocking rates (by ecological state) are developed under an expected utilization level of 50% of

the current year's growth while the proposed action depicted in the table is based upon a target of 45% utilization of current year's growth with an acceptable limit of 50% not to be exceeded in two consecutive years. If 50% is exceeded in two consecutive years that triggers a change in management to reduce utilization levels below 50%.

By targeting 45% utilization levels, use levels are not expected to exceed 50% within suitable acres of the allotment on average. Holechek, et al. defines 40-50% utilization as conservative to moderate (Table. 8.15). Appendix W of the Bighorn Basin Resource Management Plan-Final Environmental Impact Statement defines an appropriate utilization level for areas not meeting rangeland health standards to be 50% or less in the dormant season. For acres that are meeting rangeland health standards an acceptable use level is 60%. This applies to those areas of 14 inches or less of precipitation.

Because there are failing acres in every allotment it was deemed appropriate to prescribe the more conservative use level of 50% for a maximum while targeting 45% in the stocking rate analysis. The 45% use level was used in the stocking rate analysis to provide a more conservative approach designed to accommodate use level objectives relative to annual variances in vegetative production.

The following is an abbreviated table derived from that found in the appendix. Stocking rates on private and/or state lands were not included in the analysis-those remain the same as previously stocked.

Table 3. Carrying Capacity based on Suitable Acres and Ecological State				
Allotment	BLM Acres	Suitable BLM Acres	ESD AUMS (50% Utilization)	Proposed AUMs* (45% utilization)
East Cottonwood	3,415	2362	582	311
Coal Draw (sheep)	6,551	4899	512	461
Coal Draw (cattle)	6,551	2251	169	152
Wagonhound	8,170	5187	799	719
Wagonhound Bench	3,478	2265	376	339
West Cottonwood	7,086	2775	564	507

*These are derived strictly from the spreadsheets and the analysis while that being offered in the permit may vary slightly from this table due to rounding and variables such as livestock numbers or number of days of use. Efforts were made to have as little difference as possible between the two.

Direct and Indirect Effects

No Action/No Grazing

The No Grazing alternative would remove livestock grazing from the Coal Draw, East Cottonwood, West Cottonwood, Wagonhound, and Wagonhound Bench allotments. No AUMs would be authorized and the allotments would not be stocked. This alternative would require an amendment to the RMP to remove the allotments from being open for grazing.

Proposed Action

East Cottonwood

The proposed action would allow for 308 public AUMs of livestock grazing to be used each year from October 16 through March 31. This grazing would be by cattle and would occur primarily on 2,362 suitable acres of 3,415 total acres within the allotment. This represents 69% of the acres within the allotment. Therefore, approximately 31% of the acres within the allotment would receive little or no grazing from domestic livestock.

As portrayed above, the stocking rate analysis estimates there to be 582 AUMs available at 50% use while the proposed action prescribes 308 AUMs of use with a targeted utilization level of 45% of current year's growth. This alternative would allow for an appropriate amount of AUMs to be utilized by domestic livestock during the non-growing season of the year on suitable acres.

Wagonhound (the combining of West Cottonwood, Wagonhound, and Wagonhound Bench Allotments)

The proposed action would allow for 1,557 public AUMs of livestock grazing to be used each year from October 16 through March 31 and at a stocking (acres/aum) more conservative than prescribed within the ESD's. This grazing would be by cattle and would occur primarily on 10,227 suitable acres of 18,734 total acres within the allotment. This represents 55% of the acres within the allotment. Therefore, approximately 45% of the acres within the allotment would receive little or no grazing from domestic livestock.

As portrayed above, the stocking rate analysis estimates there to be 1,739 AUMs available for use while the proposed action prescribes 1,557 AUMs of use with an expected utilization level of 45% of current year's growth. This alternative would allow for an appropriate amount of AUMs to be utilized by domestic livestock during the non-growing season of the year on suitable acres.

Coal Draw

Within the allotment cattle or sheep would be authorized for use. However, only one animal kind could be authorized in a grazing year. Cattle are more dependent upon open water than are sheep-which would utilize snow more efficiently than cattle. As such, the suitable acres for cattle and sheep differ. The suitable acres for cattle would be directly tied to developed water sources while the sheep areas of suitable use would only be restricted by rock outcrops and steeper slopes.

Sheep

The proposed action would allow for 461 public AUMs of livestock grazing to be used each year from October 16 through March 31 and at a stocking (acres/aum) more conservative than prescribed within the ESD's. This grazing would be by sheep and would occur primarily on 4,899 suitable acres of 6,551 total acres within the allotment. This represents 75% of the acres within the allotment. Therefore, approximately 25% of the acres within the allotment would receive little or no grazing from domestic livestock.

As portrayed above, the stocking rate analysis estimates there to be 512 AUMs available for use while the proposed action prescribes 461 AUMs of use with an expected utilization level of 45% of current year's growth. This alternative would allow for an appropriate amount of AUMs to be utilized by domestic livestock during the non-growing season of the year on suitable acres.

Cattle

The proposed action would allow for 152 public AUMs of livestock grazing to be used each year from October 16 through March 31 and at a stocking (acres/aum) more conservative than prescribed within the ESD's. This grazing would be by cattle and would occur primarily on 2,251 suitable acres of 6,551 total acres within the allotment. This represents 34% of the acres within the allotment. Therefore, approximately 66% of the acres within the allotment would receive little or no grazing from domestic livestock.

As portrayed above, the stocking rate analysis estimates there to be 169 AUMs available for use while the proposed action prescribes 152 AUMs of use with an expected utilization level of 45% of current year's

growth. This alternative would allow for an appropriate amount of AUMs to be utilized by domestic livestock during the non-growing season of the year on suitable acres.

Cumulative Effects

There are no active proposals or applications for current or future actions on the allotment received by the BLM other than the current grazing application analyzed within the document. No authorized livestock grazing has occurred on the allotment for approximately 10 years. Because no foreseeable future actions or other present or past actions have been identified there would be no cumulative effects to range administration of the allotment.

Vegetation

Native Vegetation

Issue(s) Identified

Upland Vegetation – How would the proposed action and other alternatives affect the vegetation's ability to maintain meeting or progress towards meeting Rangeland Health Standard 3: Upland vegetation on ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance?

Affected Environment

Rangeland Health-Common to all allotments

The Worland Field Office conducts monitoring to determine if Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming are met-this is commonly referred to as S&G's. The Worland Field Office bases S&G determinations on field observations, Indicators of Rangeland Health, and monitoring. The sites assessed represent a majority of the vegetation types and ecological sites in the allotments. The Ecological Site Descriptions (ESDs) developed by the Natural Resource Conservation Service (NRCS) are then used to determine what state the vegetation is in and if that state is meeting the requirements for healthy rangeland standards. These ESDs are specific to precipitation zone and Ecological Site.

S&Gs were performed in 2014 on the Coal Draw #00574, East Cottonwood #00534, West Cottonwood #00535, Wagonhound #00596, and Wagonhound Bench #00573 allotments with determinations signed in May and June of 2015. For a more complete description of the process and findings of the S&Gs a citation for these documents and a website that they may be viewed at is located at the end of this EA in the References section. Appendix B depicts the amount of acres within each ecological site and state, as well as the appropriate stocking rate recommendations and suitability classifications within those sites/states.

East Cottonwood Allotment

Affected Environment

Rangeland Health

In 2014, Rangeland Health Assessments were conducted on the allotment. It was determined that the acres (not including Rock Outcrop/Unclassified acres/roads) were not meeting the Upland Vegetation standard due to historic grazing, historical introduced seedings and/or manmade disturbances or invasive species altering the vegetative community (Map 3).

Ecological sites encountered within the allotment are primarily Sandy sites and saline upland sites. The allotment is located within the 5-9 inch precipitation zone or the lower end of the 10-14 inch precipitation zone. Within this zone and on the ecological sites the ESD's show that 80% of the plant growth,

including reproduction functions, in the 10-14" precipitation zone occurs about April 15 to July 15. Cool weather and moisture in September may produce some additional regrowth/green up of cool season plants which could continue to October if weather conditions allow.

Within the Sandy sites the ecological state was defined as a Big Sagebrush/Bare ground community. These sites/states have had a significant change or shift from the potential of the site. Desirable species are present but much reduced and annual herbaceous production is less. Less desirable species are present and have increased in production. In order for the community state to return to a more desirable state long term prescribed grazing as well as mechanical management and seeding may need to occur. The prescribed stocking rate for this state at Historical Climax Plant Community is 2.5 Acres/AUM however in the current state the prescribed stocking rate is 5 Acres/AUM. These stocking rates are based upon a 50% utilization level.

The Saline Upland sites of the allotment were "farmed" in 1968 as a land improvement prescription which involved over 1,000 acres. At that time it was seeded to a variety of species-some native and some not. The monitoring completed in 2014 clearly shows the effects of that effort. So, while much of it was planted on saline upland sites the vegetative community doesn't reflect that of any vegetative state found within the ESDs. The area does provide herbaceous production though. A mechanical treatment would have to occur in order to restore a native vegetative community.

Direct and Indirect Effects (East Cottonwood)

No Action/No Grazing-East Cottonwood

Under this alternative, no livestock grazing would be authorized on 3,415 acres of public land of which 2,362 acres are suitable for livestock grazing. The vegetative community would be afforded the opportunity to initiate growth, maximize growth, and reproduce unabated by domestic livestock grazing. Based on the current condition of the communities, it would be expected that herbaceous growth would occur and the reproductive efforts of the vegetation would be successful. It would not be expected that the current range conditions would transition to a better ecological state/condition without mechanical treatments (NRCS-Ecological Site Descriptions).

Proposed Action-East Cottonwood

The Proposed Action would authorize a permitted use of 308 Active AUMs at a rate of 7.7 Acres/Animal Unit Month (A/AUM). This stocking rate is based upon suitable acres within the allotment and is based upon a 45% utilization level. In comparison, the ESDs recommend 5 A/AUM and a 50% utilization level. Grazing by cattle would remove the herbaceous growth during the dormant season which is the least critical period for foliage removal because the plant is photosynthetically inactive (Holechek et. al. 2011, pg. 81) and the annual growth cycle has been completed. Livestock use would be limited to those areas that have available water, feed, and are not limited by topography-this defines suitable acres. Impacts from grazing would occur on those suitable acres within the allotment. Vegetation within the allotment would have the opportunity to initiate growth, maximize growth, and reproduce unabated by domestic livestock grazing each year from April through October. As such, it would be expected that maximum annual herbaceous growth would be achieved (given weather conditions) and the reproductive efforts of the vegetation would be successful. This growth and reproduction would occur primarily in April, May and June. The dormant season use of the vegetation by livestock would minimize impacts to the vegetative resources and allow for the plants to gain vigor and reproduce. Based upon the prescribed grazing scheme (dormant season) and the conservative stocking rate (better than prescribed by the ESD), and the expected use level of 45% it is expected the rangeland health conditions of the allotment would maintain but would likely not transition to the next higher ecological state without mechanical treatments.

When compared to the no action/no grazing alternative, the proposed action would allow livestock grazing within the allotment. Grazing would remove 308 public AUMs of forage each year on suitable

acres during the vegetative dormant season. The ecological states within the allotment would likely remain the same because of the transitional pathway to a higher ecological state would likely require more than a prescribed grazing scheme-it would require additional mechanical means.

Cumulative Effects-East Cottonwood

There have been no active proposals or applications for current or future actions within the Allotment other than the proposed action analyzed within this document. Therefore, there would be no cumulative effects to the vegetative resources.

Wagonhound Allotment

Affected Environment

Rangeland Health

In 2014, Rangeland Health Assessments were conducted on the allotment which is the combination of West Cottonwood, Wagonhound, and Wagonhound Bench allotments of old. It was determined that there were some acres the acres meeting and some not meeting the Upland Vegetation standard. It was determined that 9,331 acres were meeting Standard 3 and 7,102 acres were not meeting Standard 3. Acres such as rock outcrops, roads, etc. are not evaluated. Those acres not meeting is/was due to historic grazing, historical introduced seeding efforts and/or manmade disturbances or invasive species altering the vegetative community (Map 3).

Ecological sites encountered within the allotment are primarily shallow loamy, sandy, shallow sandy, saline upland and loamy sites. The allotment is located within the 5-9 inch precipitation zone or the lower end of the 10-14 inch precipitation zone. Within this zone and on the ecological sites the ESD's show that approximately 80% of the plant growth, including reproduction functions, in the 10-14" precipitation zone occurs about April 15 to July 15. Cool weather and moisture in September may produce some additional regrowth/green up of cool season plants which could continue to October if weather conditions allow.

Sandy Range sites

Within the sandy sites the ecological state was defined as a Big Sagebrush/Bare ground community. These sites/states have had a significant change or shift from the potential of the site. Desirable species are present but much reduced and annual herbaceous production is less. Less desirable species are present and have increased in production. In order for the community state to return to a more desirable state long term prescribed grazing as well as mechanical management and seeding may need to occur. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 2.5 Acres/AUM however in the current state the prescribed stocking rate is 5 Acres/AUM. These stocking rates are based upon a 50% utilization level.

Shallow Sandy sites

Within the shallow sandy sites the ecological state was defined as a Threadleaf sedge sod community. These sites/states have had a significant change or shift from the potential of the site. Desirable species are present but much reduced and annual herbaceous production is less. Less desirable species are present and have increased in production. In order for the community state to return to a more desirable state long term prescribed grazing as well as mechanical management and seeding would need to occur. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 5 Acres/AUM however in the current state the prescribed stocking rate is 10 Acres/AUM. These stocking rates are based upon a 50% utilization level.

Loamy sites

Within the loamy sites of the allotment, the ecological states were defined as Perennial Grass/Big sagebrush and Blue grama sod communities.

The Blue grama sod sites have had a significant change or shift from the potential of the site. Desirable species are present but much reduced and annual herbaceous production is significantly less. Less desirable species are present and have increased in production. This state is extremely resistant to change and in order for the community state to return to a more desirable state long term prescribed grazing as well as mechanical management and seeding would need to occur. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 2.5 Acres/AUM however in the current state the prescribed stocking rate is 10 Acres/AUM. These stocking rates are based upon a 50% utilization level.

The Perennial Grass/Big sagebrush sites have a plant community that is still intact and dominated by cool season desirable species such as bluebunch wheatgrasses and needleandthread grass. This state is resistant to change and well adapted to grazing. In order for the community state to return to HCPC prescribed grazing schemes would need to be implemented. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 2.5 Acres/AUM however in the current state the prescribed stocking rate is 3.3 Acres/AUM. These stocking rates are based upon a 50% utilization level.

There are also acres of loamy range sites within the allotment that were “farmed” in 1968 as a land improvement prescription which involved approximately 750 acres. At that time it was seeded to a variety of species-some native and some not. The monitoring completed in 2014 clearly shows the effects of that effort. So, while much of it was planted on loamy range sites the vegetative community doesn’t reflect that of any vegetative state found within the ESDs. The area does provide herbaceous production though. A mechanical treatment would have to occur in order to restore a native vegetative community.

Shallow Loamy sites

Within the shallow loamy sites of the allotment, the ecological states were defined as Perennial Grass/mixed shrub community as well as communities that appeared to be transitioning between the Bluebunch wheatgrass/needleandthread community (HCPC) and the Perennial grass/mixed shrub community.

Both of the ecological states have a plant community that is still intact and dominated by cool season desirable species such as bluebunch wheatgrasses and needleandthread grass. These states are resistant to change and well adapted to grazing. While it is not possible to exceed HCPC it is possible to convert to a perennial grass/mixed shrub community through season long grazing. It is also possible to convert from this state to HCPC through prescribed grazing schemes. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 5 Acres/AUM while the stocking rate for the perennial grass/mixed shrub community is 5.9 Acres/AUM. As such the a stocking rate within 5-5.9 would be recommended by the ESD. These stocking rates are based upon a 50% utilization level.

Saline Upland sites

Within the saline upland sites of the allotment, the ecological states were defined as Gardner’s saltbush/bare ground communities.

The Gardner’s saltbush/bare ground sites have had a significant change or shift from the potential of the site. Gardner’s saltbush dominates the site, there is little diversity and cool season species have been much reduced. Herbaceous production is significantly less than HCPC. Less desirable species are present and have increased in production. This state is resistant to change and even frequent or severe grazing. In order for the community state to return to a more desirable state long term prescribed grazing as well as mechanical management and seeding would need to occur. The prescribed ESD stocking rate

for this state at Historical Climax Plant Community is 4 Acres/AUM however in the current state the prescribed stocking rate is 20 Acres/AUM. These stocking rates are based upon a 50% utilization level.

Direct and Indirect Effects (Wagonhound)

No Action/No Grazing-Wagonhound

Under this alternative, no livestock grazing would be authorized on 18,734 acres of public land of which 10,227 acres are suitable for livestock grazing. The vegetative community would be afforded the opportunity to initiate growth, maximize growth, and reproduce unabated by domestic livestock grazing. Based on the current condition of the communities, it would be expected that herbaceous growth would occur and the reproductive efforts of the vegetation would be successful. For those communities that have the potential to improve without mechanical interventions the ecological state may improve to a higher ecological state. For those sites that no longer have the capability to transition to a higher ecological state without mechanical treatments it would be expected that those sites would remain static- the current range conditions would not transition to a better ecological state/condition without mechanical treatments (NRCS-Ecological Site Descriptions).

Proposed Action-Wagonhound

The Proposed Action would authorize a permitted use of 1,557 Active AUMs at a rate of 6.6 Acres/Animal Unit Month (A/AUM). This stocking rate is based upon suitable acres within the allotment and is based upon a 45% utilization level (10,227 suitable acres/1,557 AUMs). In comparison, the ESDs recommend 5.9 A/AUM and a 50% utilization level (10,227/1,739). Grazing by cattle would remove a portion (45%) of the herbaceous growth during the dormant season which is the least critical period for foliage removal because the plant is photosynthetically inactive (Holechek et. al. 2011, pg. 81) and the annual growth cycle has been completed.

Livestock use/grazing of vegetation would be limited to those areas that have available water, feed, and are not limited by topography-this defines suitable acres. Impacts from grazing would occur on those suitable acres within the allotment. Areas that are further from water or on steeper slopes would incur little or no grazing impacts in any year. By grazing in the dormant season the vegetation within the allotment would have the opportunity to initiate growth, maximize growth, and reproduce unabated by domestic livestock grazing each year from April through October. As such, it would be expected that maximum annual herbaceous growth would be achieved (given weather conditions) and the reproductive efforts of the vegetation would be successful. This growth and reproduction would occur primarily in April, May and June. The dormant season use of the vegetation by livestock would minimize impacts to the vegetative resources and allow for the plants to gain vigor and reproduce. Based upon the prescribed grazing scheme (dormant season) and the conservative stocking rate (better than prescribed by the ESD), and the expected use level of 45% it is expected that those communities that have the potential to improve without mechanical interventions the ecological state may improve to a higher ecological state. For those sites that no longer have the capability to transition to a higher ecological state without mechanical treatments it would be expected that those sites would remain static- the current range conditions would not transition to a better ecological state/condition without mechanical treatments (NRCS-Ecological Site Descriptions).

When compared to the no action/no grazing alternative, the proposed action would allow livestock to graze within the allotment. Grazing would remove 1,557 public AUMs of forage each year on suitable acres during the vegetative dormant season. Some of the ecological states within the allotment would likely remain the same because of the transitional pathway to a higher ecological state would likely require more than a prescribed grazing scheme-it would require additional mechanical means. Other ecological states could improve because the sites have potential to improve with or without prescribed grazing.

Cumulative Effects-Wagonhound

There have been no active proposals or applications for current or future actions within the Allotment other than the proposed action analyzed within this document. Therefore, there would be no cumulative effects to the vegetative resources.

Coal Draw Allotment

Affected Environment

Rangeland Health

In 2014, Rangeland Health Assessments were conducted on the allotment. It was determined that there were some acres meeting and some not meeting the Upland Vegetation standard. It was determined that 1,563 acres were meeting Standard 3 and 4,126 acres were not meeting Standard 3. Acres such as rock outcrops, roads, etc. are not evaluated. Those acres not meeting is/was due to historic grazing and invasive species altering the vegetative community (Map 3).

Ecological sites encountered within the allotment are primarily shallow loamy, saline upland and loamy sites. The allotment is located within the 5-9 inch precipitation zone or the lower end of the 10-14 inch precipitation zone. Within this zone and on the ecological sites the ESD's show that approximately 80% of the plant growth, including reproduction functions, in the 10-14" precipitation zone occurs about April 15 to July 15. Cool weather and moisture in September may produce some additional regrowth/green up of cool season plants which could continue to October if weather conditions allow.

Loamy sites

Within the loamy sites of the allotment, the ecological states were defined as Big sagebrush/Bare ground communities.

The Big sagebrush/bare ground sites have had a significant change or shift from the potential of the site. Desirable species are present but much reduced and annual herbaceous production is significantly less. Less desirable species are present and have increased in production. This state is resistant to change and in order for the community state to return to a more desirable state long term prescribed grazing as well as mechanical management and possibly seeding would need to occur. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 2.5 Acres/AUM however in the current state the prescribed stocking rate is 5 Acres/AUM. These stocking rates are based upon a 50% utilization level.

Shallow Loamy sites

Within the shallow loamy sites of the allotment, the ecological states were defined as Perennial Grass/mixed shrub community.

This ecological state has a plant community that is still intact and dominated by cool season desirable species such as bluebunch wheatgrasses and needleandthread grass. The state is resistant to change and well adapted to grazing. It is possible to convert from this state to HCPC through prescribed grazing schemes. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 5 Acres/AUM while the stocking rate for the perennial grass/mixed shrub community is 5.9 Acres/AUM. These stocking rates are based upon a 50% utilization level.

Saline Upland sites

Within the saline upland sites of the allotment, the ecological states were defined as Gardner's saltbush/bare ground communities.

The Gardner's saltbush/bare ground sites have had a significant change or shift from the potential of the site. Gardner's saltbush dominates the site, there is little diversity and cool season species have been

much reduced. Herbaceous production is significantly less than HCPC. Less desirable species are present and have increased in production. This state is resistant to change and even frequent or severe grazing. In order for the community state to return to a more desirable state long term prescribed grazing as well as mechanical management and seeding would need to occur. The prescribed ESD stocking rate for this state at Historical Climax Plant Community is 4 Acres/AUM however in the current state the prescribed stocking rate is 20 Acres/AUM. These stocking rates are based upon a 50% utilization level.

Direct and Indirect Effects (Coal Draw)

No Action/No Grazing-Coal Draw

Under this alternative, no livestock grazing would be authorized on 6,551 acres of public land of which 2,251 acres are suitable for cattle grazing or 4,899 are suitable for sheep grazing. The vegetative community would be afforded the opportunity to initiate growth, maximize growth, and reproduce unabated by domestic livestock grazing. Based on the current condition of the communities, it would be expected that herbaceous growth would occur and the reproductive efforts of the vegetation would be successful. For those communities that have the potential to improve without mechanical interventions the ecological state may improve to a higher ecological state. For those sites that no longer have the capability to transition to a higher ecological state without mechanical treatments it would be expected that those sites would remain static- the current range conditions would not transition to a better ecological state/condition without mechanical treatments (NRCS-Ecological Site Descriptions).

Proposed Action-Coal Draw

The Proposed Action would authorize grazing by either sheep or cattle. Grazing would be made by only one animal kind annually-there would be no combining livestock kinds in a single year of use. If sheep are utilized 459 Active AUMs would be authorized at a rate of 11.7 Acres/Animal Unit Month (A/AUM). This stocking rate is based upon suitable acres within the allotment for sheep and is based upon a 45% utilization level (4,899 suitable acres/459 AUMs). If cattle are utilized 151 Active AUMs would be authorized at a rate of 14.9 Acres/Animal Unit Month (A/AUM). This stocking rate is based upon suitable acres for cattle within the allotment and is based upon a 45% utilization level (2,251 suitable acres/151 AUMs). In comparison, the ESDs recommend 9.6 A/AUM and a 50% utilization level (4,899 Acres/512 AUMs) for sheep and 13.3 A/AUM at a 50% utilization level (2,251 suitable acres/169 AUMs) for cattle. Grazing by cattle would remove a portion (45%) of the herbaceous growth during the dormant season which is the least critical period for foliage removal because the plant is photosynthetically inactive (Holechek et. al. 2011, pg. 81) and the annual growth cycle has been completed.

Livestock use/grazing of vegetation would be limited to those areas that have available water or snow, feed, and are not limited by topography-this defines suitable acres. Impacts from grazing would occur on those suitable acres within the allotment. Areas that are further from water or on steeper slopes would incur little or no grazing impacts in any year. By grazing in the dormant season the vegetation within the allotment would have the opportunity to initiate growth, maximize growth, and reproduce unabated by domestic livestock grazing each year from April through October. As such, it would be expected that maximum annual herbaceous growth would be achieved (given weather conditions) and the reproductive efforts of the vegetation would be successful. This growth and reproduction would occur primarily in April, May and June. The dormant season use of the vegetation by livestock would minimize impacts to the vegetative resources and allow for the plants to gain vigor and reproduce. Based upon the prescribed grazing scheme (dormant season) and the conservative stocking rate (better than prescribed by the ESD), and the expected use level of 45% it is expected that those communities that have the potential to improve without mechanical interventions the ecological state may improve to a higher ecological state. For those sites that no longer have the capability to transition to a higher ecological state without mechanical treatments it would be expected that those sites would remain static- the current range conditions would not transition to a better ecological state/condition without mechanical treatments.

When compared to the no action/no grazing alternative, the proposed action would allow livestock to graze within the allotment. Grazing would remove either 459 public AUMs (sheep) or 151 public AUMs (cattle) of forage each year on suitable acres during the vegetative dormant season. Some of the ecological states within the allotment would likely remain the same because of the transitional pathway to a higher ecological state would likely require more than a prescribed grazing scheme-it would require additional mechanical means. Other ecological states could improve because the sites have potential to improve with or without prescribed grazing.

Cumulative Effects-Coal Draw

There have been no active proposals or applications for current or future actions within the Allotment other than the proposed action analyzed within this document. Therefore, there would be no cumulative effects to the vegetative resources.

Soil/ Water Resources (Water Quality, Surface Water, Wetlands and Riparian Zones)

Issue(s) Identified

How would the issuance of a grazing permit impact the soil and water resources as related to rangeland health Standard 1? *“Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.”*

If a change in runoff were to occur as a result, what would be the impact to water quality from a new grazing permit in the watershed of the allotment? (Rangeland Health Standard 5)

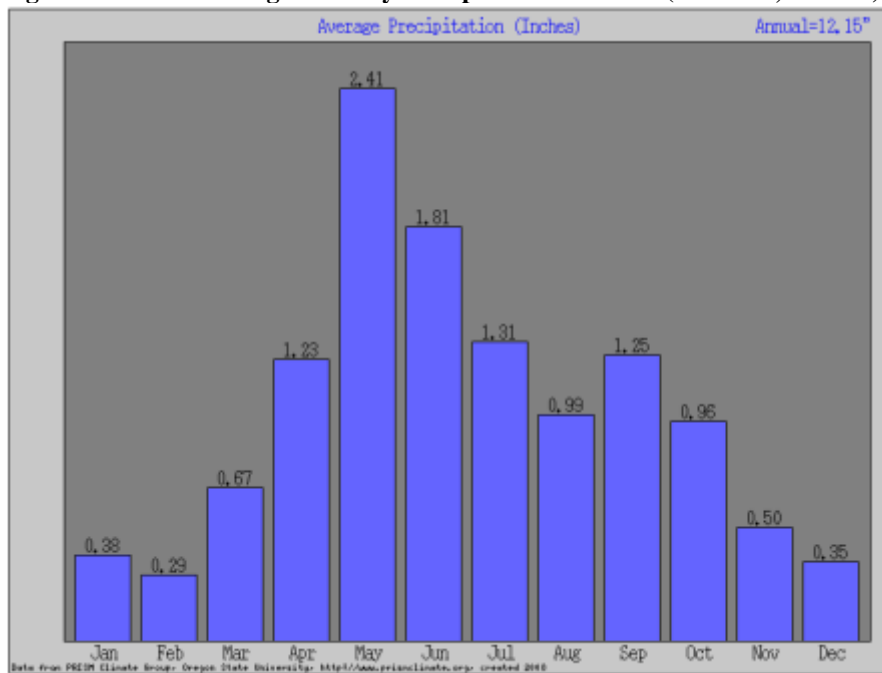
How would the issuance of a grazing permit impact the functioning condition of the riparian/wetland areas as related to rangeland health Standard 2? *“Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge”.*

Affected Environment

Precipitation

The affected allotments as mentioned in the range section of the document are found primarily within the 10-14 inch precipitation zone as defined by the NRCS. Another precipitation model used for estimation of the average rainfall is the PRISM model which uses a cell based elevation grid and estimates average monthly rainfall as defined in the table below.

Figure 1 PRISM Average Monthly Precipitation 30m Cell (43.78721;-108662) Wagonhound Allotment



Elevation

The maximum and minimum elevations for each allotment within the watershed were calculated along with the average slope given in percent rise for each 10 meter digital elevation grid. The Wagonhound allotment is at the middle elevations of the Cottonwood Creek watershed with the maximum, minimum, and average listed in the table below.

Table 4. Maximum and minimum elevations for each allotment

Allotment	Max Elev (ft)	Min Elev (ft)	Average Elev (ft)	Average Slope (% Rise) 10m
East Cottonwood	5,270	4,782	4,974	8.4
West Cottonwood	6,176	4,942	5,261	15.2
Wagonhound Bench	5,769	5,168	5,374	7.1
Wagonhound	6,229	5,390	5,715	17.1
Coal Draw	5,291	4,427	4,761	14

Soils

The soils reflect the desert environment in which they formed. They are highly variable, reflecting differences in parent material (shale, sandstone and/or mixed alluvium), position on the landscape, slope and aspect. Soil depth ranges from 10 inches to over 60 inches with sandstone and soft shale bedrock common below the substratum. The soils typically have a light brown surface layer. Loamy and sandy surface textures dominate most of the landscape. The subsoil often reflects an increase in clay being expressed as an argillic horizon. Increases in sodium are also common being reflected as a natric horizon in the subsoil. Slopes range from 0 to 60 percent, but are generally less than 30 percent. The average slopes for the allotments as calculated vary from 7 to 20 percent. The soils in the three allotments support saline upland, shallow loamy, loamy, and sandy loamy ecological sites. These are soil derived from Cretaceous aged shale and sandstone bedrock that are present in the allotment. The soil map hydrologic groups

are vary from type B (moderate infiltration and runoff) to type D soils with (low infiltration and runoff) the maps are found in Appendix A of the document.

Figure 1 Coal Draw Soil Map Units

Coal Draw Public Land Soils (May 2014)						
SOIL_NO	Map_Unit_Name	Surface Texture	Slope	Ecological Site	Precip Zone	Acres
70	CADOMA SILTY CLAY LOAM	sicl	1-15	SU	10-14	158.95
102	ROCK OUTCROP	ro	0-100	RO	5-19	486.95
109	EPSIE(45%)-ROCK OUTCROP(40%) COMPLEX	sic,ro	3-60	SU,RO	10-14	933.97
111	ROCK OUTCROP(30%)-SHINGLE(25%)-TASSEL(25%) COMPLEX	ro,l,sl	3-60	RO,SwLy,SwLy	10-14	273.35
190	EPSIE(45%)-SHINGLE(30%)-COMPLEX	sicl,l	6-45	SU,SwLy	10-14	1744
247	TORRIORTHENTS SEVERELY ERODED	all	0-15	none	5-19	163.57
322	NIHILL(45%)-SHINGLE(30%) GRAVELLY LOAMS	grl,grl	3-45	Gr,SwLy	10-14	225.43
382	ROCK OUTCROP(40%)-TASSEL(40%) COMPLEX	ro,l	3-60	RO,SwSy	10-14	560.94
448	TORRIFLUENTS SALINE	none	0-6	NONE	5-19	236.84
449	TRAVESSILLA(45%)-ROCK OUTCROP(40%) COMPLEX	l,ro	3-60	VS,RO	10-14	65.93
705	KIM(50%)-THEDALUND(30%) LOAMS	l,l	3-15	Ly(Cy),Ly	10-14	333.38
752	EPSIE SILTY CLAY LAOM	sicl	3-15	SU	10-14	1253.85
902	SAMSIL(50%)-SHINGLE(20%)-ROCK OUTCROP(15%) COMPLEX	c,l,ro	3-45	SwCy,SwLy,RO	10-14	114.83
sicl=silty clay, ro= rock outcrop, l= loamy, grl=gravel, c=clay						
Total						6551.99

Figure 3 West Cottonwood Soil Map Units

West Cottonwood Soils (May 2014)						
SOIL_NO	Map_Unit_N	Surface Text	Slope	Precip_Zone	Ecological Site	Acres
60	CADOMA(45%)-KIM(45%) COMPLEX	sicl,l	1-10	10-14	SU,Ly(Cy)	221.54
69	KIM LOAM	l	0-10	10-14	Ly(Cy)	116.54
70	CADOMA SILTY CLAY LOAM	sicl	1-15	10-14	SU	50.64
93	VONA(50%)-OLNEY(30%) SANDY LOAMS	sl,sl	0-10	10-14	Sy,Sy	33.94
102	ROCK OUTCROP	ro	0-100	5-19	RO	731.14
111	ROCK OUTCROP(30%)-SHINGLE(25%)-TASSEL(25%) COMPLEX	ro,l,sl	3-60	10-14	RO,SwLy,SwLy	2147.4
190	EPSIE(45%)-SHINGLE(30%)-COMPLEX	sic,l	6-45	10-14	SU,SwLy	127.02
243	KIM ALKALI(50%)-KIM(30%) LOAMS	l,l	0-6	10-14	SL,Ly(Cy)	129.86
244	KIM ALKALI LOAM	L	0-6	10-14	SL	0.29
247	TORRIORTHENTS SEVERELY ERODED	all	0-15	5-19	none	34.3
322	NIHILL(45%)-SHINGLE(30%) GRAVELLY LOAMS	grl,grl	3-45	10-14	Gr,SwLy	699.57
324	LARIMER(40%)-NIHILL(40%) COMPLEX	l,grl	3-45	10-14	Ly,Gr	451.94
346	NELSON(30%)-TERRY(30%)-OTERO(20%) COMPLEX	fsl,sl,fsl	3-20	10-14	Sy,Sy,Sy	680.46
372	TASSEL(50%)-NELSON(25%) SANDY LOAMS	sl,sl	3-45	10-14	SwSy,Sy	72.01
382	ROCK OUTCROP(40%)-TASSEL(40%) COMPLEX	ro,l	3-60	10-14	RO,SwSy	300.69
383	ROCK OUTCROP(30%)-TASSEL(30%)-NELSON(20%) COMPLEX	ro,sl,sl	3-60	10-14	RO,SwSy,Sy	695.3
393	OLNEY(45%)-BOWBAC(35%) FINE SANDY LOAMS	fsl,fsl	3-15	10-14	SwLy,Ly	118.51
448	TORRIFLUENTS SALINE	none	0-6	5-19	NONE	185.94
490	SHINGLE(40%)-THEDALUND(35%) LOAMS	l,l	3-45	10-14	SwLy,Ly	230.19
705	KIM(50%)-THEDALUND(30%) LOAMS	l,l	3-15	10-14	Ly(Cy),Ly	14.81
UNK	UNKNOWN	unk	unk	unk	unk	19.59
sicl=silty clay, ro= rock outcrop, l= loamy, grl=gravel, c=clay, sl= sandy loam, fsl=fine sandy loam						
Total						7061.68

Figure 4 East Cottonwood Soil Map Units

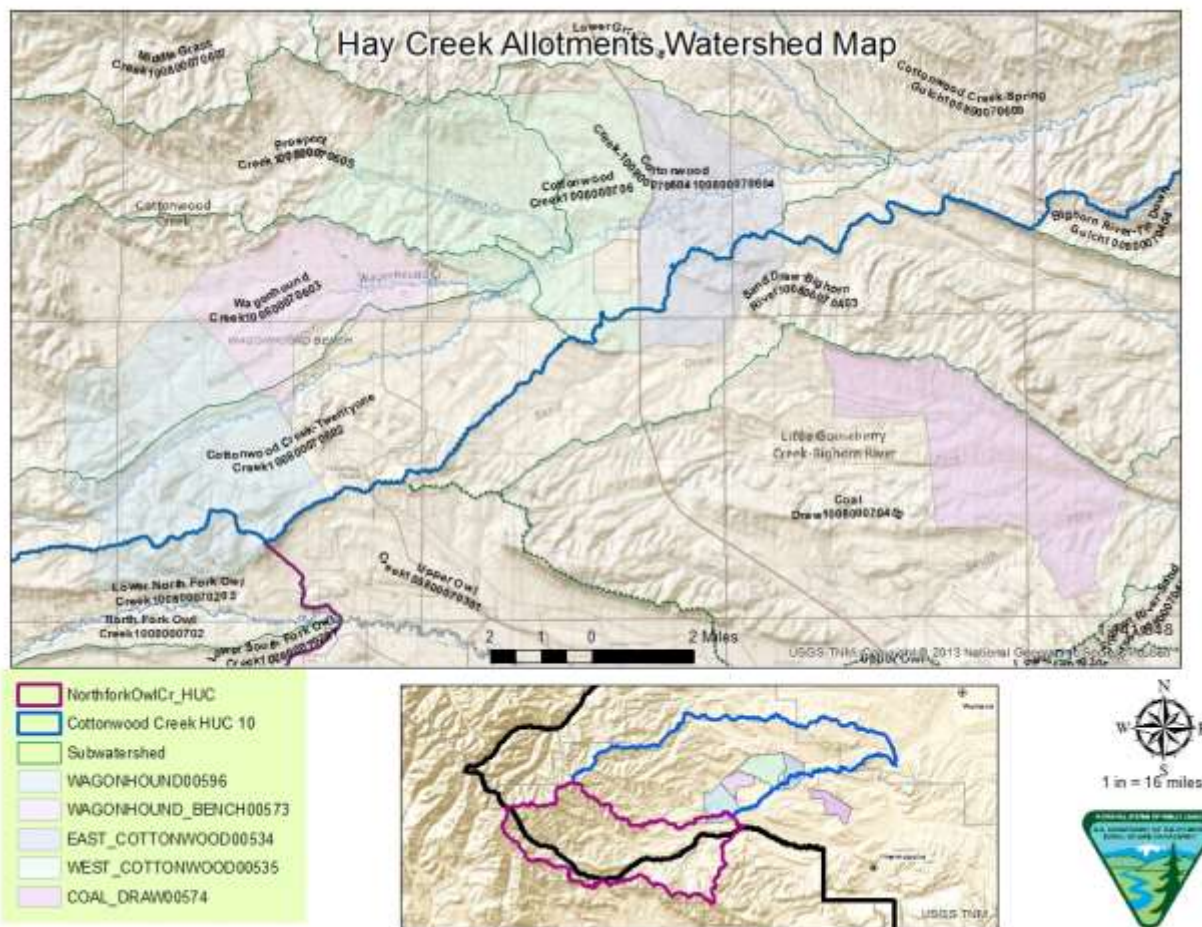
East Cottonwood Soils						
SOIL_NO	Map_Unit_N	Surface Texture	Slope	Ecological Site	Precip_Zone	Acres
11	LARIMER LOAM	l	0-8	Ly	10-14	22.39
11L	LARIMER SANDY LOAM	sl	0-8	Sy	10-14	34.67
60	CADOMA(45%)-KIM(45%) COMPLEX	sicl,l	1-10	SU,Ly(Cy)	10-14	37.97
69	KIM LOAM	l	0-10	Ly(Cy)	10-14	116.29
70	CADOMA SILTY CLAY LOAM	sicl	1-15	SU	10-14	428.37
75	ARVADA(40%)-KIM ALKI(35%) COMPLEX	fsl,l	0-10	SU,SL	10-14	0
93	VONA(50%)-OLNEY(30%) SANDY LOAMS	sl,sl	0-10	Sy,Sy	10-14	339.54
102	ROCK OUTCROP	ro	0-100	RO	5-19	64.04
111	ROCK OUTCROP(30%)-SHINGLE(25%)-TASSLE(25%) COMPLEX	ro,l,sl	3-60	RO,SwLy,SwLy	10-14	349.77
190	EPSIE(45%)-SHINGLE(30%)-COMPLEX	sic,l	6-45	SU,SwLy	10-14	94.44
247	TORRIORTHENTS SEVERELY ERODED	all	0-15	none	5-19	94.89
322	NIHILL(45%)-SHINGLE(30%) GRAVELLY LOAMS	grl,grl	3-45	Gr,SwLy	10-14	79.61
346	NELSON(30%)-TERRY(30%)-OTERO(20%) COMPLEX	fsl,sl,fsl	3-20	Sy,Sy,Sy	10-14	285.33
372	TASSEL(50%)-NELSON(25%) SANDY LOAMS	sl,sl	3-45	SwSy,Sy	10-14	112.51
382	ROCK OUTCROP(40%)-TASSEL(40%) COMPLEX	ro,l	3-60	RO,SwSy	10-14	25.09
383	ROCK OUTCROP(30%)-TASSEL(30%)-NELSON(20%) COMPLEX	ro,sl,sl	3-60	RO,SwSy,Sy	10-14	511.86
393	OLNEY(45%)-BOWBAC(35%) FINE SANDY LOAMS	fsl,fsl	3-15	SwLy,Ly	10-14	170.99
448	TORRIFLUENTS SALINE	none	0-6	NONE	5-19	100.53
705	KIM(50%)-THEDALUND(30%) LOAMS	l,l	3-15	Ly(Cy),Ly	10-14	339.28
752	EPSIE SILTY CLAY LAOM	sicl	3-15	SU	10-14	207.95
sicl=silty clay, ro= rock outcrop, l= loamy, grl=gravel, c=clay, sl= sandy loam, fsl=fine sandy loam						Total
						3415.52

Surface Water/Watershed

These allotments with the exclusion of Coal Draw are located within several 6th level or HUC 12 sub-watersheds as defined by the United States Geological Survey (USGS). These sub-watersheds are smaller watersheds within the Cottonwood Grass Creek, Owl Creek, and Bighorn River 5th level or HUC 10 watersheds. The amount of acres from the allotment as related to the 6th level sub- watershed as defined by the United States Geologic Survey (USGS) is found in the watershed table and map below.

Table 5. Acres from the allotment as related to the 6th level sub- watershed						
Sub-Watershed Name (HU12)	HUC 12	Acres	(mi)	Allot Acres	Allot mi ²	% of Acres of Sub-watershed in the allotment
Cottonwood Creek-Twentyone Creek	100800070604	34550	53.98	15961	24.93	46.1
Prospect Creek	100800070605	26588	41.54	7293	11.4	27.4
Lower North Fork Owl Creek	100800070301	34435	53.8	1961	3.1	5.8
Wagonhound Creek	100800070605	28334	44.27	4374	6.8	15.3
Sand Draw-Bighorn River	100800070403	29039	45.3	2680	4.2	9.2
Upper Owl Creek	100800070305	46494	72.6	15	0.02	0.02
Lower Grass Creek	100800070608	28855	45	19	0.06	0.03
Cottonwood Creek Spring Gulch	100800070609	43598	68.1	22	0.03	0.04
Total:				32325	50.5	

Figure 5 -Hay Creek Allotments Watershed



The Coal Draw allotment falls mainly within the Coal Draw-Bighorn River sub-watershed with only 26 acres in the Sand Draw watershed to the north. The amount of acres from the allotment as related to the 6th level sub- watershed as defined by the USGS is found in the table below. Sand Draw originates west of the Bighorn River and flows in an eastern direction through the allotment to confluence with the North and South Forks of Coal Draw to the east of the allotment. Other significant sized drainages in the allotment are Wagon Gulch and the North Fork and South Fork of Coal Draw.

Table 6. Coal Draw Watershed			
Watersheds			
Watershed (HUC) Level #6	Acres (mi ²)	Acres (mi ²) Within Allotment	% of Acres of Watershed in the Allotment
Coal Draw-Bighorn River (100800070402)	44,189(69)	7,760(12.1)	17.6%
Sand Draw-Bighorn River	29,039 (45.3)	26 (0.001)	0.001%

The Cottonwood/Grass Creek watershed is located in Hot Springs and Washakie Counties. The watershed is comprised of the combined drainage basins of Cottonwood Creek and its main tributary, Grass Creek (of which the LU allotment is located). The main drainages in the western pastures are Grass

Creek (tributary to Cottonwood Creek) that flows in an eastern direction, originating from the upper elevations of the Absaroka foothills. The majority of the main drainages are located on state or private land, with the exception of some meander segments that are located on public land throughout the reaches. There are several smaller perennial and intermittent tributaries that drain into Grass Creek that are located on public land segments. The Cottonwood/Grass Creek Watershed was studied by the Wyoming Water Development Commission (WWDC) in 2007 under a level I study and 2011 with a more detailed level II study. The study encompasses the hydrology of the creeks and summarizes the overall water use and availability of surface water in the watershed.

The economy of the watershed is based on agriculture (primarily cattle ranching and associated forage production) and oil and limited natural gas extraction at two larger (Hamilton Dome and Grass Creek) and a number of smaller still active fields (SEH, 2007 p.5).

The perennial stream reaches in the watershed (including the uppermost reaches of Cottonwood and Grass Creeks and their high elevation tributaries) are the result of higher precipitation (including greater snowpack) and greater groundwater recharge that, in turn, results in higher spring time runoff flows and sustain seep and spring discharge to these stream reaches through the summer and fall. As noted by local ranchers and other stakeholders in the watershed, the extent of the upper watershed perennial stream reaches has declined significantly over the course of the current drought, with many smaller springs ceasing to flow and greatly reduced flows in larger springs (SEH, 2007 p.32).

Cottonwood Creek flows through the allotments on private and state land. There are reservoirs located in all of the allotments. These reservoirs generally capture one time flow from runoff or snow melt. The 5 reservoirs were functional and holding marginal amounts of water during the 2014 field inventory. Many of the reservoirs are found within the Wagonhound allotment and are associated with oil and gas produced water. The condition of the reservoirs and water availability was used in the stocking rate analysis as part of the proposed action alternative.

Rosgen Types- The main channel of Cottonwood Creek is a third order stream with a dominant Rosgen C type in the allotments with slope of less than 2 percent and a moderate to high sinuosity and width depth ratio. The tributary channels within the watershed are dominantly Rosgen G5 type streams that are defined as (Rosgen, 1996) entrenched, narrow, and deep channels with a low to moderate sinuosity. These types have high bank erosion rates and a high sediment supply. Rosgen F5 type channels, which are also present, are described as entrenched, meandering channels which are deeply incised in valleys of relatively low relief such as the Coal Draw sub-watershed. They contain highly weathered rock and erodible materials, and high lateral extension rates and bar deposition following infrequent storm events.

Drainage Pattern- The dominant land forming topographic process is from alluvial forces of erosion. The drainage pattern is a dendritic drainage pattern that reflects horizontal sedimentary bedrock over which it was formed. The drainage density or amount of drainages per square mile is high, and very high along badland on steep rock outcrops of the allotment.

Riparian Areas

There are no riparian areas on public land within the Wagonhound allotment. The riparian areas are found within the Cottonwood Creek floodplain areas that are predominantly private and state land.

In the Coal Draw allotment, Historically Sand Draw, RAIDS Segment T0001X, received sufficient produced water and was capable of supporting riparian vegetation around the perimeter of the small active channel. However following field investigation of the segment in 2014, there was no evidence of

The other riparian area on public land is a small isolated seep area named Harris Spring. This is adjacent to private land and is located in T 44North Range 96 West Section 23. This spring was developed for livestock use. The water is piped to a tank with overflow into a reservoir. The naturally occurring riparian characteristics surrounding the area have been altered as a result of the water diversion from the spring source.

Riparian Areas Wagonhound Allotments

Wagonhound Ranch

Sand

North

Fort

Riparian Segments

0 1.75 3.5 Miles

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In the Wagonhound Bench, East and West Cottonwood allotments the main drainage with riparian characteristics are segments of Cottonwood Creek (P0406X) that flows in an eastern direction through the allotments. There is sufficient ground water that occurs at a depth that supports various Cottonwood galleries within the floodplain area along portions of the creek. The other drainage is Wagonhound which is located in the center of has an intermittent flow regime using the (Hedman, 1983) definition of flow likely occurring in the channel between 30 to 90 days on average out of the year. Flow in the channel is present following snow melt in the spring and following storm events during the summer and fall months. The adjacent upland terraces are populated by upland species. There are other riparian areas that have developed around reservoirs and other water impoundments in the allotment and are classified according to the National Wetlands Inventory (NWI) data.

Table 7. Riparian Areas Wagonhound Bench Allotment										
ID#	Riparian Area	TWN (beg)	RNG (beg)	SEC	QTR	Miles	Acres	Width	DEQ Class	Gradient
P0406X	Cottonwood Ck	044N	098 W	10	NWSE	0.5	3.7	50	2AB	<1
I0217X	Prospect Ck	045N	098 W	19	SESE	3.6	13.1	30	3B	3
P0101X	Wagonhound Ck	045N	097 W	32	SWN W	0.5	2.1	50	2AB	<2
P0405X	Cottonwood Ck	045N	097 W	28	SENE	0.1	0.7	60	2AB	<2
902105	Norman Sanford Spr	045N	097 W	17	SWNE	N/A	0.2	10	N/A	<1
P0404X	Cottonwood Ck	045N	097 W	23	SESE	0.86	6.3	60	2AB	<1
P0446X	Cottonwood Ck	045N	096 W	18	SESE	0.43	3.1	60	2AB	<1

The riparian area found in the allotment is a 0.5 mile segment of Cottonwood Creek as identified in the riparian Table 7. This segment was evaluated using BLM Technical Reference Manuals 1737-15 and 1737-16 “A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic and Lotic Areas”

Table 8. Riparian Segment									
BLM ID#	Riparian Area	(mi)	Water Type	Date Assessed	Gradient (%)	Rosgen Class	Function	Trend	Rating Scale
P0406X	Cottonwood Ck.	0.5	Perennial	1/23/2015	0.2	C5	PFC	NA	10
I0217X	Prospect Ck	3.6	Intermittent	2014	2.3	F4	FAR	Up	NA
P0101X	Wagonhound Ck	0.5	Intermittent	8/20/2002	0.8	E5	PFC	NA	NA
P0405X	Cottonwood Ck.	0.1	Perennial	6/15/1994	0.2	C5	NF	NA	0
902105	Norman Sanford Spring		Lentic	7/23/2014	NA	NA	PFC	NA	
P0404X	Cottonwood Ck	0.86	Perennial/Produced	7/23/2009	<2	C5	FAR	NA	3
P0446X	Cottonwood Ck	0.43	Perennial/Produced	7/23/2009	<2	C5	FAR	NA	4
		PFC=Proper Functioning Condition FAR=Functioning at Risk N/A= Not Apparent U=Unknown Rating Scale= 0- Non Functioning, 1-9 Functioning at Risk, 10-19-PFC, 20=Potential Natural Community.							

P0406X- Cottonwood Creek

This segment was initially inventoried in 1994 and rated functioning at risk with an upward trend. This segment was re-evaluated for PFC using the manual mentioned above. Photos were also taken to

document recent conditions. This segment has public access via a county road with the riparian area consisting of the entire floodplain area of Cottonwood Creek. One the southern end of the segment there are two seep areas that is likely from ground water movement linked to the Hamilton Dome field. The banks appeared to be stable and the Rosgen type was appropriate for the segment. There were no signs of accelerated erosion. There is extensive salt cedar infestations located below the segment and is of concern if the salt cedar migrates upstream. When compared to 2006 photos the segment has improved from the FAR rating and current conditions are meeting PFC.

Figures 7&8 show Cottonwood Creek and Wagonhound Creek in the allotment.

Figure 7 P0406X- Cottonwood Creek



I0217X- Prospect Creek

These segments were initially inventoried in 2004 and rated functioning at risk with an upward trend. There was note of previous historic overgrazing and long term recovery of this intermittent segment is needed. There was evidence of vertical instability with head-cuts common and channel instability present. There were nick points and headcuts present in the channel as the channel attempts to reestablish equilibrium. These segments were further evaluated as part of the Level I watershed study with cross sections that provide additional information. These segments were also assessed in the field season of 2014 following a local heavy rain event. There was evidence of minor erosion and scouring of channel banks. The upper reaches have greater riparian characteristics such as canopy cover provided mainly by Cottonwood trees and higher amounts of water in the soil profile (Figure 3-4) compared to lower segments (Figure 5) that are intermittent/ephemeral in nature. Periodic pooling of water is common in the channel following rain events as captured in the photos.

P0101X

This is a segment on public land at the confluence of Wagonhound and Cottonwood Creek. The vegetation consists of sedges, salt cedar, inland salt grass, alkali sacaton and Rubber Rabbit Brush. The flow regime is intermittent and this segment was rated to be in Proper Functioning Condition in 2002.

P0405X

This is an isolated meander segment of Cottonwood Creek that is completely surrounded by private land. The initial inventory in 1994 indicated that the segment was non-functional due to private ownership as a large portion of the drainage, weeds, and historic channel degradation beyond the control of the BLM. This segment is similar to segments rated the same as segments in the East Cottonwood allotment. There has been Salt Cedar removal in 2008 and 2009 that has improved the conditions; however regrowth has occurred until present in 2014.

Norman Sanford Spring (Crackerbox Spring)

This spring has been developed with the spring source fenced for protection. The majority of the water and riparian vegetation is present surrounding the tanks that are located below the exclosure. The natural spring area is dominated by facultative dry with some wet plant type species near the center of the area. There are cattails and sedges growing around the tank area. The area currently has a perimeter fence and the functionality of the area was rated to be in proper functioning condition (PFC).

P0404X

This segment was rated as FAR primarily due to the presence of weeds that are dominant throughout the Greenline area and through the active floodplain area. There was also noted bank instability and lack of sufficient riparian vegetation along the Greenline to prevent and protect the banks during high flow events. There was also extensive Tamarisk initial treatments performed by Hot Springs County that have occurred since 2009; however follow up treatments have not occurred regularly. Tamarisk has been reduced from 2009 levels, but is still present along large portions of the creek. The flow regime in the segment is augmented by discharge water from Hamilton Dome and is a contributing factor to weed problems in the area. This is beyond the scope of the BLM authority. Below is a recent overview photo (6/19/2014) of the segment. These areas are currently not meeting Standard 1 (soils) due to instability or Standard 2 (riparian) due to excessive amounts of weeds and lack of sufficient perennial riparian vegetation along the Greenline and floodplain areas. There has been noted improvement since 2009 and additional weed treatment will aide in making progress to achieve these standards.

Figure 8 P0404X



P0446X

This segment consists of two meanders on Cottonwood Creek that are located downstream from P0404X with riparian conditions, PFC rating, management, and other characteristics that are very similar to P0404X. The same rating was given to this segment as a result.

Water Quality (Surface)

The following is taken from the Wyoming DEQ 2012 305b report (p.102).

Figure 9 Wyoming DEQ 2012 report (p102)

2012 WY Integrated Report

Bighorn River Basin (continued)					
305(b) Identifier	Waterbody	Location	Class	Miles/Acres	Uses Supported
Cottonwood Creek	WYBH100800070609_01	From the confluence with the Bighorn River upstream to the confluence with Wagonhound Creek	2AB	29.5 mi.	Cold Water Fishery, Aquatic Life other than Fish, Wildlife, Agriculture, Industry

The main drainages in the allotments are classified by the Wyoming DEQ. The supported uses are outlined in the table above.

The associated beneficial uses for class 2AB streams are found in the table below. This is the rating given by the DEQ following a use attainability analysis and public comments. DEQ defines “these streams support drinking water, game fish, aquatic life, recreation, wildlife, agriculture, industry, and provide scenic value throughout portions of the year. Other intermittent and ephemeral tributaries have been assigned a 3B rating and support the uses as defined in the table below. The beneficial use of agriculture is dominant throughout the creek and according to the 2012 305b report the use is currently being met.

Table 9. Wyoming DEQ Surface Water Use Class and TMDL Summary

Surface Water Classes	WY DEQ Use Designations									
	Drinking Water	Game Fish	Non-Game Fish	Fish Consumption	Other Aquatic Life	Recreation	Wildlife	Agriculture	Industry	Scenic Value
2AB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Direct and Indirect Effects

No Action/No Grazing

With the continued absence of permitted grazing, the rangeland health attributes of *Soil and Site Stability* and *Hydrologic Function* would be anticipated to improve somewhat more rapidly toward the soil conditions to support an historic climax plant community (HCPC) for those sites that are still capable of doing so. Potential changes would still be characterized as slow and steady, due to the arid nature of the allotments. Without the removal of the current year’s growth by herbivory, total vegetative cover would stabilize or increase, infiltration would remain stable or increase and runoff would be at the same current rate or reduced. Erosion indicators, particularly amount of bare ground, rills, pedestals, water flow patterns would continue to gradually heal and become stabilized by soil crusts in the upper profile along

with expected increased amounts of litter and cover. Slower to respond would be the extent to which plants are pedestalled and the historic loss of the A horizon that has occurred in portions of the allotments. Currently the soil parameters are meeting rangeland health Standard 1, which states:

“Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.”

There would be no expected increase in the amount of erosion and/or runoff. The volume of runoff from upland areas would decrease and the water quality of runoff would remain unchanged or improve as a result of upland conditions meeting Standard 1.

The amounts of runoff for a given a year depend on a variety of factors; one controllable factor is the amount of vegetation and cover present in riparian areas and also in upland areas in the allotment. The upland conditions in healthy condition and meeting Standard 1 would minimize surface runoff contributions in the affected watersheds of each allotment.

With the continued absence of permitted grazing the riparian and wetland areas in the allotment would improve in ecological condition and make progress toward Worland ARMP management objective 4034 “Manage all riparian/wetland areas and streams with unique recreational or aquatic values to meet or make progress towards PFC, giving priority to those areas that are functioning at risk with a downward trend or that are in non-functioning condition.” and have lower potential disturbance to riparian and aquatic areas near perennial streams and other perennial water sources. The rate of succession and improvement for riparian areas is generally faster than upland areas and is dependent upon several natural factors such as amount of runoff, levels of disturbance, and precipitation. Improved upland conditions are linked to riparian areas by the amounts of erosion and runoff and the ability of the stream to function following storm events. The areas that are currently at PFC would remain at PFC, areas that are currently functioning at risk or non-functional would likely improve due to increased vegetation amounts associated with the removal of herbivory from grazing animals and decreased disturbance levels to streambank channel areas in the vicinity of perennial waters. Numerous studies have linked removal of grazing to improved riparian conditions. There would be continued occasional use of such areas by wildlife. Other factors that contribute to not meeting Standard 2 for riparian areas which are not directly livestock related, such as weeds would remain problematic for meeting the standard.

Deferred rotation grazing led to improvement of aquatic and riparian habitats along three central Nevada streams, but complete rest from grazing allowed the most improvement (Myers and Swanson, 1991).

Streambank soil stability, type and amount of vegetation cover, and quality of pools responded most to changes in grazing management. Complete rest improved channel and water width: depth ratios, channel entrenchment, bank angle, bank undercut, and bank depth. These changes are common, but not universal.

The expected impact to water quality as a result would be reduced levels of bacteria (primarily e-coli associated with animal waste) and lower levels of total suspended sediment (turbidity) due to lower runoff and erosion rates in the allotment. The state DEQ surface water classifications for the perennial waters in the allotment would remain unchanged and continue to meet the designated beneficial uses for each segment.

Proposed Action

Under this alternative a grazing permit would be issued for grazing within the allotments. There would be permitted grazing that would occur on an annual basis at the level outlined in the grazing section of this document. This would have a potential to affect the *Soil and Site Stability* and *Hydrologic Function* of the soils in the allotment. There would be annual disturbance from hoof action, partial vegetation removal

from grazing activity in upland and riparian areas. This would cause some disturbance in the top of the soil profile, and reduction of vegetative cover to provide litter and organic matter in the top of the soil profile. The soil and erosion indicators are linked to proper vegetation management. If the prescribed grazing as proposed is at an appropriate level, there would be sufficient vegetative cover and litter remaining post grazing to provide conditions that would continue to support soil Standard 1. The grazing during the fall and winter months when rainfall and soil conditions are dry or frozen would also reduce the overall impact to soil resources from trampling and compaction.

Riparian areas are generally most susceptible to degradation from year round and intense summer grazing. *“Some potential advantages from dormant season grazing are minimal soil compaction, limited bank trampling, utilization of the herbaceous species is not detrimental to the plants and distribution is more easily controlled. Disadvantages are reduction in streambank protection capabilities, reduced sediment entrapment in the spring, potential browsing of trees and shrubs, damage to trees and shrubs by trampling and rubbing, and potential for soil compaction if livestock are present when spring thaw occurs”* (BLM Grazing Management Processes and Strategies for Riparian-Wetland Areas,2006).

However there has been historic grazing that has occurred in the allotment at sufficient levels that has been able to support and maintain Rangeland Standard 1 and Standard 2. The issuance of the permit would be at an appropriate stocking level to maintain these standards.

“Management of the associated uplands can directly affect conditions in the riparian area. Consequently, it is important to consider the entire watershed and its resources when developing a grazing management strategy. A successful grazing management strategy meets the needs of the operator, livestock, wildlife, and upland and riparian resources. Continued success is achieved by monitoring how well the strategy meets these needs and making timely adjustments as necessary” (BLM Grazing Management Processes and Strategies for Riparian-Wetland Areas p.5,2006).

There would be no expected change to the PFC rating of P0406X of which has a rating of PFC, currently the existing property boundary fence is in disrepair and this segment has received sporadic use as a result, there would be no change from current conditions.

The Norman Sanford Spring area currently has a functioning enclosure fence and is protected from grazing. The proposed action would not have an impact to this riparian area.

For segment I0217X along Prospect Creek that has an intermittent flow regime there would not likely be concentrated use of the riparian areas during the non-growing season. There would be potential browsing of young and smaller tree and shrub species as a result.

For Segments P0404X, P0405X and P0446X all of which are isolated segments along Cottonwood Creek that are currently rated at the Non Functional and Functioning at risk levels, there would be potential impacts to the riparian areas from herbivory and hoof action that may occur on frozen ground in the dormant season. These segments were rated as not meeting Standard 2 due to excessive weeds present in the riparian area.

The use level limits and adaptive management would be necessary in upland and riparian areas to ensure no excessive grazing occurs that would cause a decline in the functioning condition of the riparian areas mentioned in the affected environment section.

With proper vegetation management, there would be no expected increase in volume of runoff in the sub-watershed. Due to the presence of annual grazing there would be animal waste that would impact current natural conditions for water quality following storm events capable of transporting sediment and bacteria in runoff. If excessive use levels do not occur, the level of impact would be minor and the Wyoming

DEQ designated beneficial uses and associated use categories in the waters that are present within and downstream of the affected allotments would continue to be met. The WYDEQ designated beneficial uses for the waters in the allotment would continue to be met for each creek or drainage.

Mitigation

In order to mitigate potential impacts to Harris Spring located in the Coal Draw allotment. A boundary enclosure fence around the spring would be repaired and re-constructed to eliminate riparian resource degradation by grazing. The spring development has historically occurred and expected use would be around the reservoir area below the spring.

Cumulative Effects

There has been historic grazing that has occurred in the watershed and allotment area. The issuance of this permit would not create a cumulative effect that would impact soil, water, or riparian resources within the area. The impact would be the continuance of a grazing impact and not the creation of a new impact that would have a cumulative effect on the watersheds and riparian areas. There are no other current actions or connected actions that are carried forward for cumulative effects analysis.

Fish/Wildlife (Including Threatened, Endangered, Candidate and BLM Sensitive Species)

Issue(s) Identified

Wildlife - How would the proposed action and other alternatives affect important habitats used by mule deer, antelope, and sagebrush obligate birds like the sage-grouse, as related to rangeland health Standard 4? "Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced."

Affected Environment

Common to All Allotments

Standards & Guides were performed in 2014 on the Coal Draw #00574, East Cottonwood #00534, West Cottonwood #00535, Wagonhound #00596, and Wagonhound Bench #00573 allotments, and the met and not met determinations, including the wildlife Standard 4, were made and signed in May and June of 2015. For a complete description of these S&G findings and determinations there is a citation for these documents and a website located at the end of this EA in the References section. A synopsis of the S&Gs findings and determinations for upland vegetation, and the basis for the Standard 4 determinations, is contained below.

The following vegetative states are found within the allotments: Blue Grama Sod, Perennial Grass/Big Sagebrush, Gardner's Saltbush/Bare Ground, Big Sagebrush/Bare Ground, Introduced Grass Seedings, Gardner's Saltbush/Rhizomatous Wheatgrass, Perennial Grass/Mixed Shrub, Threadleaf Sedge Sod. Of these states only the Perennial Grass/Big Sagebrush, Gardner's Saltbush/Rhizomatous Wheatgrass, and Perennial Grass/Mixed Shrub are considered meeting Rangeland Health Standards 3 and 4. Standard 3 states, "Upland vegetation on ecological sites consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance" and Standard 4 states, "Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat....." Acres determined to be Not Meeting Standards 3 or 4 were those that have had a significant change or shift from the potential or Historic Climax Plant Community (HCPC) of the site and do not have an appropriate plant community capable of recovering or returning to a functional community without mechanical treatments, seedings, intensive grazing management, etc. These sites have little capability or probability of returning to a more desirable state. Acres Meeting

Standards 3 and 4 were found to be sites in a dynamic equilibrium with the Historic Climax Plant Community (HCPC). This means that these sites have appropriate pathways available to respond to proper grazing strategies, favorable environmental conditions, and environmental events such as wildfires. The sites have a vegetative community that is stable, intact, resistant to change, and provides for soil and watershed stability, and therefore are capable of sustaining viable populations and a diversity of native plant and animal species. Table 2 in the Rangelands/Native Vegetation section above provides public land acres Meeting and Not Meeting Standards 3 and 4 by allotment.

Coal Draw Allotment

Wildlife

Saline uplands dominate the Coal Draw allotment with some scattered sagebrush along the north and southern boundaries. Approximately 402 acres is mapped as big game crucial winter range within this allotment. Small numbers of mule deer and antelope can be expected throughout the allotment year around.

Threatened, Endangered, Candidate, or Sensitive Species

No threatened or endangered animal species are known to inhabit the allotment. Sage grouse leks have not been identified in this allotment, and the closest active leks are approximately 6 miles south and 8 miles north of the allotment boundary. Habitats in this allotment do not appear to be suitable for sage-grouse wintering, breeding, nesting or brood rearing, primarily because of the lack of sagebrush, and for this reason no sage-grouse habitat assessments were done. However, some of the smaller sagebrush communities, although sparse, could provide nesting and foraging habitat for other sagebrush obligate passerines like Wyoming BLM sensitive species: the sage thrasher, sage and Brewer's sparrow. .

East Cottonwood, West Cottonwood, Wagonhound Bench and Wagonhound Allotments

Wildlife

The East Cottonwood, West Cottonwood, Wagonhound Bench and Wagonhound allotments provide forage and cover needs for wintering big game species. There is approximately 38,400 acres of total surface estate and 20,700 acres of BLM administered surface within these allotments that are mapped as big game crucial winter range. The primary vegetative communities providing wildlife forage and cover needs that may be affected by livestock grazing are the sagebrush/bunchgrass communities. These sagebrush communities are important to wintering mule deer, antelope and wintering and nesting sage grouse, as well as other sagebrush obligate passerines. Wintering big game and sage-grouse depend on the sagebrush plants for forage, and the avian sagebrush obligates depend on both the sagebrush and standing herbaceous residue for nesting cover.

Threatened, Endangered, Candidate, or Sensitive Species

The sagebrush/bunchgrass communities provide winter, breeding, nesting and early brood rearing habitat for sage-grouse as well as breeding, nesting and foraging habitat for sagebrush obligate passerine species like the sage thrasher, sage and Brewer's sparrow. There is approximately 15,600 acres of Priority Habitat Management Areas (PHMA) within the four allotments on BLM administered surface. Sagebrush communities both in and outside of PHMA are likely providing some level of sage-grouse seasonal habitats as well as nesting and foraging habitat for other sagebrush obligate passerines. Sage-grouse wintering and breeding habitats have been documented through inventory and monitoring efforts. Nesting and late brood rearing habitats have not been well documented, however in an analysis of sage-grouse studies conducted in 7 areas in Wyoming since the mid-1990s, Holloran and Anderson (2005) found that 45% of nests were located within 2 miles (3km) of the lek where the hen was bred, and 64% of the nests were within 3 mile (5 km) of the lek. Within these 4 allotments there are 2 occupied leks, Wagonhound Cr 1lek and Cottonwood lek, and another 3 occupied leks and 1 unoccupied lek outside of, but within 2 miles of these allotments. Therefore female sage-grouse from all 5 occupied leks are likely using suitable sagebrush habitats within these allotments for nesting habitat. The unoccupied lek,

Hamilton Dome, that is approximately 1.8 miles southeast of Wagonhound allotment's southern boundary, has not seen any activity since 2010 where 2 males were observed, and prior to this the peak male attendance was 12 males in 1995. Sage-grouse habitat assessments were conducted within representative sage-grouse habitats throughout these four allotments, with a total of 10 monitoring sites or transects were selected and run where sage-grouse habitat data was collected, (see Appendix 5 Wildlife Maps for transect locations). This data is compiled and summarized in the Rangeland Health Assessments for these four Allotments, which are available online and on file at the WFO.

There are no known threatened or endangered wildlife species within these allotments, but the sage-grouse, sage thrasher, sage and Brewer's sparrow, are all Wyoming BLM sensitive species.

Direct and Indirect Effects

No Action/No Grazing

The No Grazing alternative would remove livestock grazing from the public lands within the Coal Draw, East Cottonwood, West Cottonwood, Wagonhound, and Wagonhound Bench allotments. The habitats or vegetative communities not achieving standards would remain static in their current state, and the habitats or vegetative communities that were meeting standards would be enhanced under this alternative. AUMs would not be authorized for these allotments, but livestock grazing on the private inholdings would likely continue, an indirect effect of not issuing a grazing permit could be the fencing of private lands from public lands to ensure livestock control on private lands. As such, if new fences were built on the private/BLM boundaries, which depending on fence type, could have impacts on wildlife and wildlife movements.

Livestock grazing generally occurs with some variable influence to wildlife habitat and populations, particularly if there is competition between livestock and wildlife for forage and cover, so the elimination of livestock grazing could benefit these species. The No Grazing alternative would meet the purpose of improving rangeland health by removing the grazing disturbance and providing indefinite rest from livestock use. No vegetation would be removed by livestock. The habitats or vegetative communities not achieving standards would remain static, in their current state because those communities have a low potential to improve or transition back to HCPC without mechanical treatment. These degraded sagebrush/bunchgrass communities would also remain undesirable to sagebrush obligates. Primarily because these degraded habitats are missing key plant components and/or compositions, necessary or desirable for ideal or characteristic big game winter range or avian sagebrush obligate seasonal habitats. The habitats or vegetative communities that were meeting standards will be enhanced under this alternative. This alternative would help the transitioning sites improve towards HCPC because they would not be subject to disturbance outside of natural occurrences. This transition towards HCPC would show increases in herbaceous production, residue, litter, frequency, and composition of key bunchgrass species. These vegetative enhancements towards HCPC are desirable to sagebrush obligate species, and enhanced big game winter range and avian sagebrush obligate use would be anticipated. This alternative, for habitats or plant communities meeting standards, would provide for the forage and cover needs of wildlife, as well as residue and litter for the long term maintenance of the sagebrush/bunchgrass community as well as the sagebrush obligates that depend on this community.

Proposed Action

The analysis area is defined as all BLM administered surface acres within the identified allotments. The proposed action would authorize a maximum of 2,324 AUMs of dormant season cattle and domestic sheep grazing use to occur from 10/16–3/31 on the Coal Draw, East Cottonwood, and the new Wagonhound allotments. Domestic sheep, and cattle would be allowed in the Coal Draw allotment, but not in the same annual season, and only cattle would be allowed in East Cottonwood and Wagonhound allotments.

Wildlife

This alternative would authorize livestock grazing on approximately 14,840 BLM administered acres identified as suitable for cattle grazing and 4,900 acres identified as suitable for domestic sheep grazing within the analysis area. Within this area there are 11,700 acres identified as suitable for cattle grazing that are also identified as crucial winter range for mule deer or antelope. Within the Coal Draw allotment there are 360 acres of big game crucial winter range that would be suitable for domestic sheep grazing. This area of overlap between suitable livestock grazing and big game crucial winter range is 56% BLM surface and 30% all surface ownership of what is mapped as big game crucial winter range within all allotments, and is also the portion of these allotments most vulnerable to livestock grazing induced changes in habitat. Combining the proposed dormant season use with an appropriate stocking rate the Proposed Action would at a minimum maintain the current vegetative communities and states, and therefore these crucial habitats as well.

The 13,877 acres not meeting rangeland health standards would be expected to remain static with little to no change in acreage, the 10,894 acres meeting standards have the potential to maintain or improve. The maintenance of the not meeting acres is because these sites with Moderate to Extreme departure from HCPC, according to the ESDs have a low potential to transition back to HCPC, and therefore would only be maintained, even under desirable grazing management. However, for those acres meeting standards and transitioning towards HCPC the Proposed Action would serve to aid in that transition by minimizing the effects from grazing with dormant season use and appropriate stocking levels. The transitioning sites are the most responsive to management change, and under the proposed action anticipated enhancements would include increased cover of cool season perennial grasses, and decreases in the amount of bare ground. Those acres meeting standards that are at or near HCPC would also be maintained under the Proposed Action. The proposed livestock grazing would be at appropriate stocking rates, and these stocking rate levels along with the dormant season use will promote rangeland health by leaving adequate amounts of plant residue, post livestock grazing, to support maintenance and enhancement of the watershed and wildlife habitats.

Threatened, Endangered, Candidate, or Sensitive Species

This alternative would authorize livestock grazing on approximately 14,840 BLM administered acres identified as suitable for cattle grazing and 4,900 acres identified as suitable for domestic sheep grazing within the analysis area. Within the analysis area there are 15,700 acres of PHMA on BLM administered surface. Of this, 8,940 acres are identified as suitable for cattle grazing. Sagebrush communities both in and outside of the PHMA are likely providing some level of sage-grouse seasonal habitats as well as nesting and foraging habitat for other sagebrush obligate passerines, but the PHMA is the most suitable for sage-grouse use. This area of overlap between suitable livestock grazing and PHMA is approximately 46% of the BLM surface acres mapped as PHMA within all allotments, and also the portions of these allotments most vulnerable to livestock grazing induced changes in habitat. The Proposed Action would provide adequate amounts of residue and litter as well as forage and cover for both big game and avian sagebrush obligates. However 13,877 acres of sagebrush/bunchgrass communities not meeting Standards would be expected to remain unchanged for those reasons mentioned above, and would remain undesirable for sagebrush obligates. Primarily because these degraded habitats are missing key plant components and/or compositions, necessary or desirable for ideal or characteristic big game winter range or avian sagebrush obligate wintering, breeding, nesting or foraging habitats. The sagebrush/bunchgrass communities within these allotments meeting standards will be maintained or enhanced, because these communities are within a transitional state where they still retain the soil and vegetative components necessary to respond to the proposed dormant season use and appropriate stocking levels, and will show increases in herbaceous production, residue, litter, frequency, and composition of key bunchgrass species and will be expected to transition towards HCPC. These vegetative enhancements towards HCPC are desirable to sagebrush obligate species, and enhanced big game winter range and avian sagebrush obligate seasonal habitat use would be anticipated. This alternative, for habitats or plant communities meeting

standards, will provide for the forage and cover needs of wildlife, as well as residue and litter for the long term maintenance of the sagebrush/bunchgrass community as well as the sagebrush obligates mentioned above.

An analysis of sage-grouse nest site selection from 7 study areas in Wyoming indicates that residual grass height should be a minimum of 3.9 inches (10 cm) in Wyoming big sagebrush dominated sites (Holloran et al. 2005) compared to 7 inches (18 cm) minimum live perennial herbaceous vegetation height recommended by Connelly et al. (2000) in breeding habitats. Hens nesting in these cover conditions experience higher nest success rates than those nesting under inferior cover conditions (DeLong et al. 1995, Holloran et al. 2005). As was stated above in the Affected Environment section under Range Administration the prescribed grazing utilization level for this alternative is 50% use, and the 45% use level was used in the stocking rate analysis to provide a more conservative approach designed to accommodate use level objectives relative to annual variances in vegetative production. According to Holechek, et al. 40-50% utilization is defined as conservative to moderate, and in the referenced Table. 8.15. 40-50% use levels would provide adequate amounts of herbaceous residue for sage-grouse nest concealment as described by Holloran et al. (2005) and Connelly et al. (2000).

Compared to the No Grazing alternative, under the proposed action acreages meeting and not meeting standards are expected to remain the same, but for those acres meeting standards and able to transition towards HCPC, the transition would likely be faster under the No Grazing alternative. Under this alternative there is no reasonably foreseeable need to construct additional fencing on the private/BLM boundaries.

Cumulative Effects

The issuance of this permit would not create a cumulative effect that would impact wildlife resources within the area.

Tribes, Individuals, Organizations, or Agencies Consulted:

List of Persons, Agencies and Organizations Consulted

SHPO
Wyoming Game and Fish

List of Preparers

The following Worland Field Office personnel reviewed or have been contacted with regard to this EA.	
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Marit Bovee	Archeologist
Jim Critz	Engineer
Derek Trauntvein John Elliott Karen Hepp Mike Peck	Range Management Specialists
Tim Stephens	Wildlife Biologist
Jared Dalebout	Hydrologist
Leslie Coleman	NRS
Connie Craft	Realty Specialist
Adam Babcock	Recreation Specialist
Darci Stafford	NRS
Franklin Sanders	PE
Dr. Yvonne Warren	NRS
Jim Gates	Forester
Cam Henrichsen	Range Management Specialist/Wild Horses
Nancy Patterson	Recreation Specialist/Travel Management
Holly Elliott	P&EC

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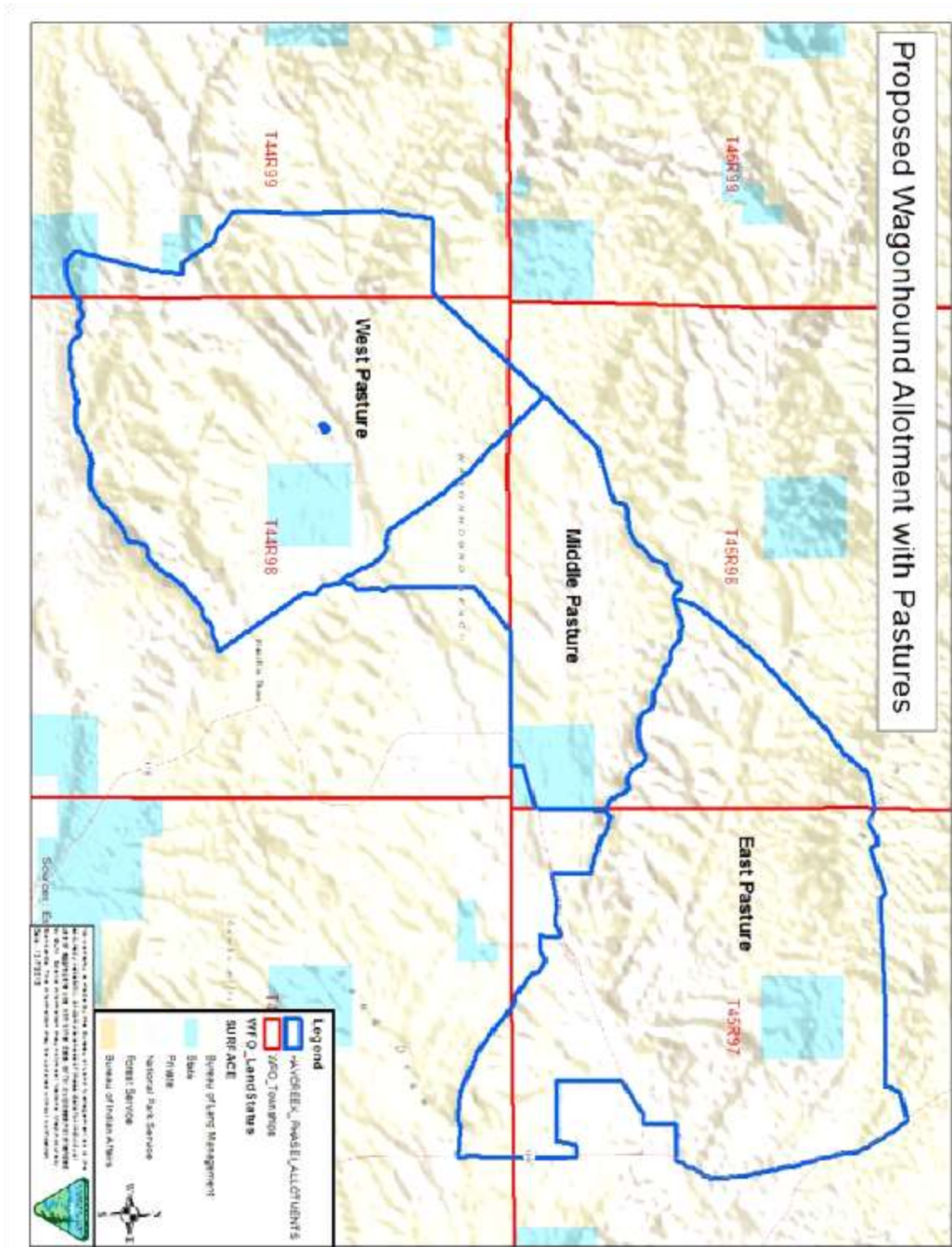
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



Appendix A





Map 2: Soil Hydrologic Groups (Infiltration and Runoff Potential)

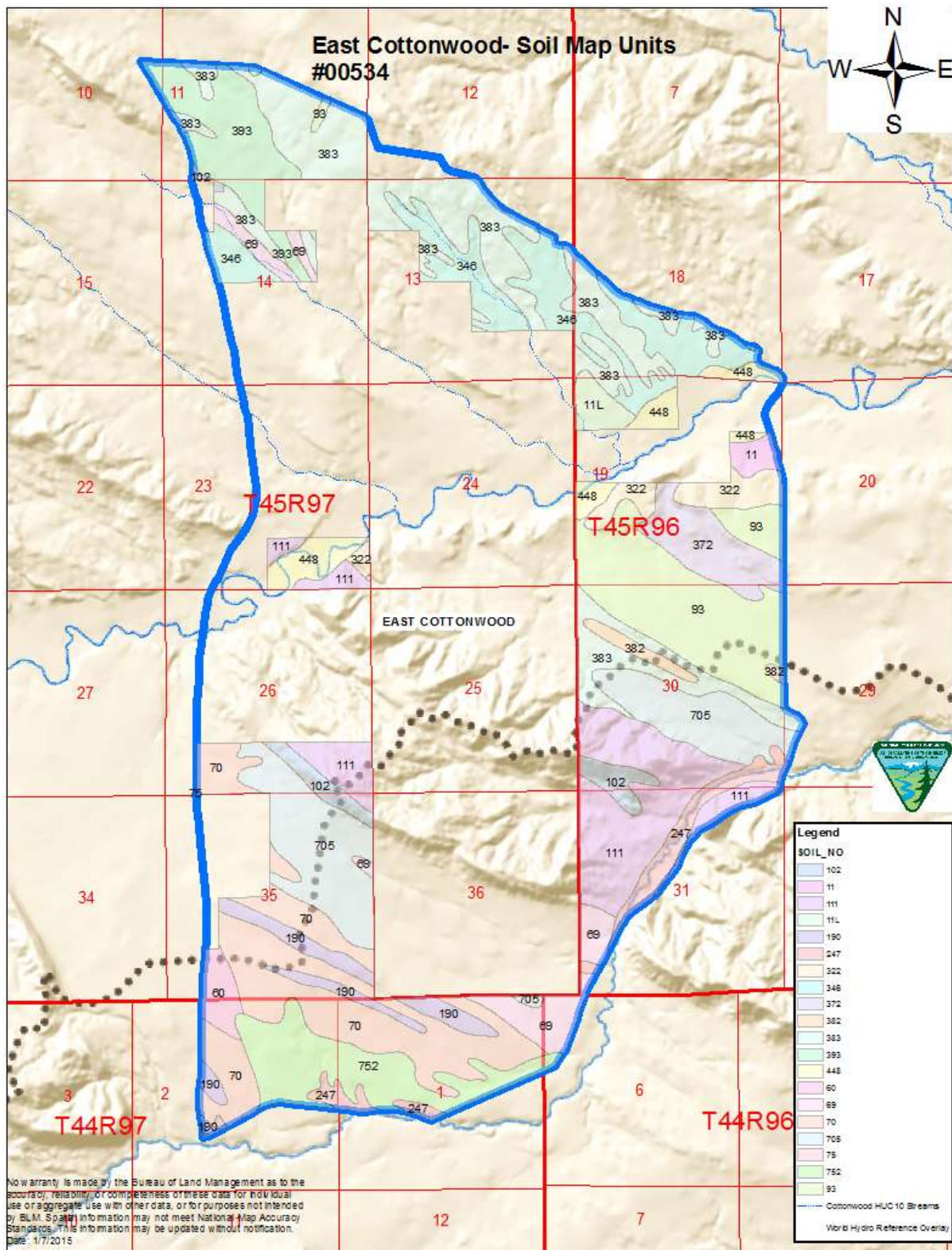
Coal Draw Soil Hydrologic Group

 Group B. Soils having a moderate infiltration rate when thoroughly wet.
 Group C. Soils having a slow infiltration rate when thoroughly wet.
 Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet.
 Rock Outcrop- No infiltration expected



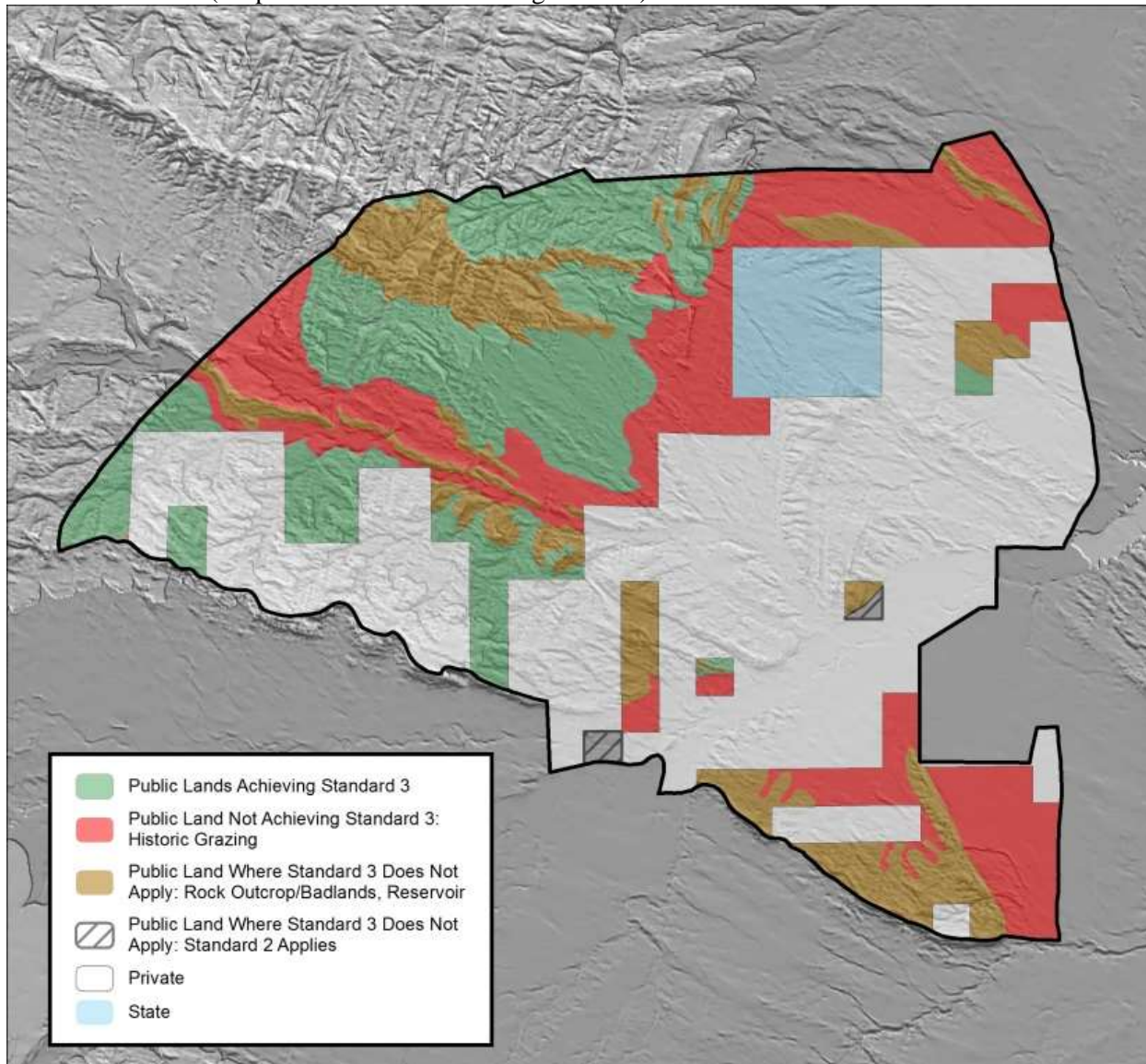
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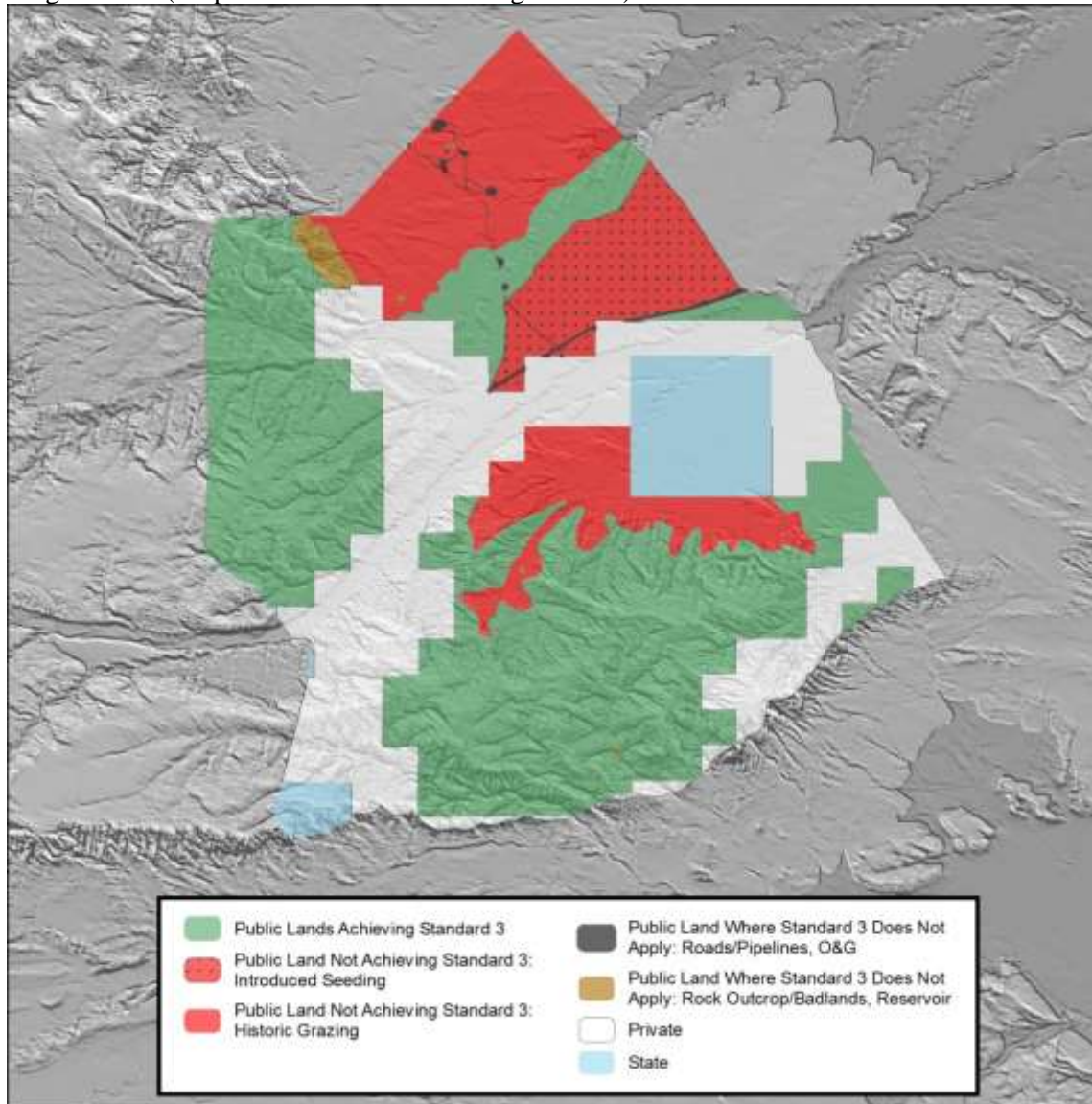


Map 3: Upland Vegetation Standard Conformance (Standard 3)

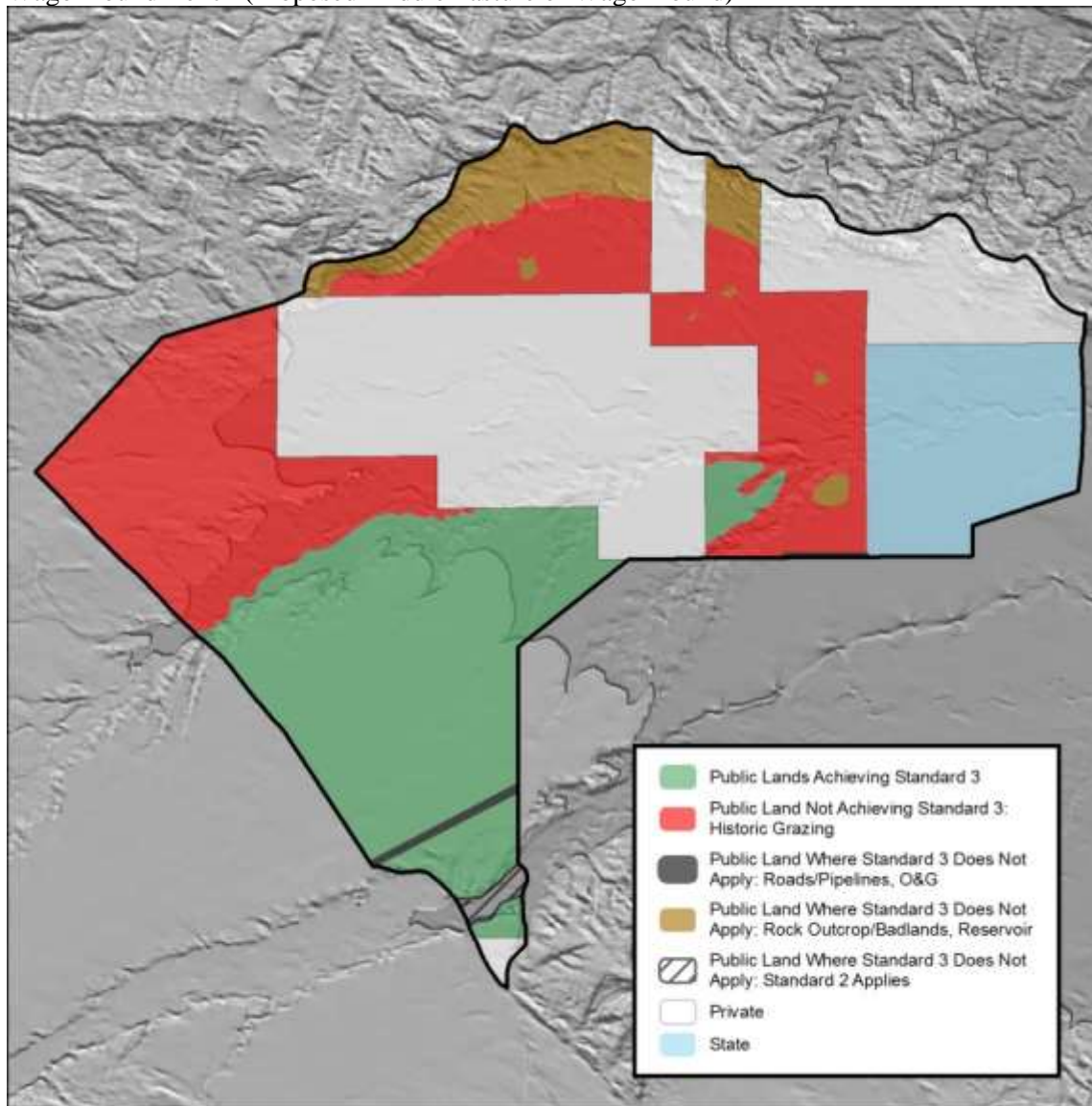
West Cottonwood (Proposed East Pasture of Wagonhound)



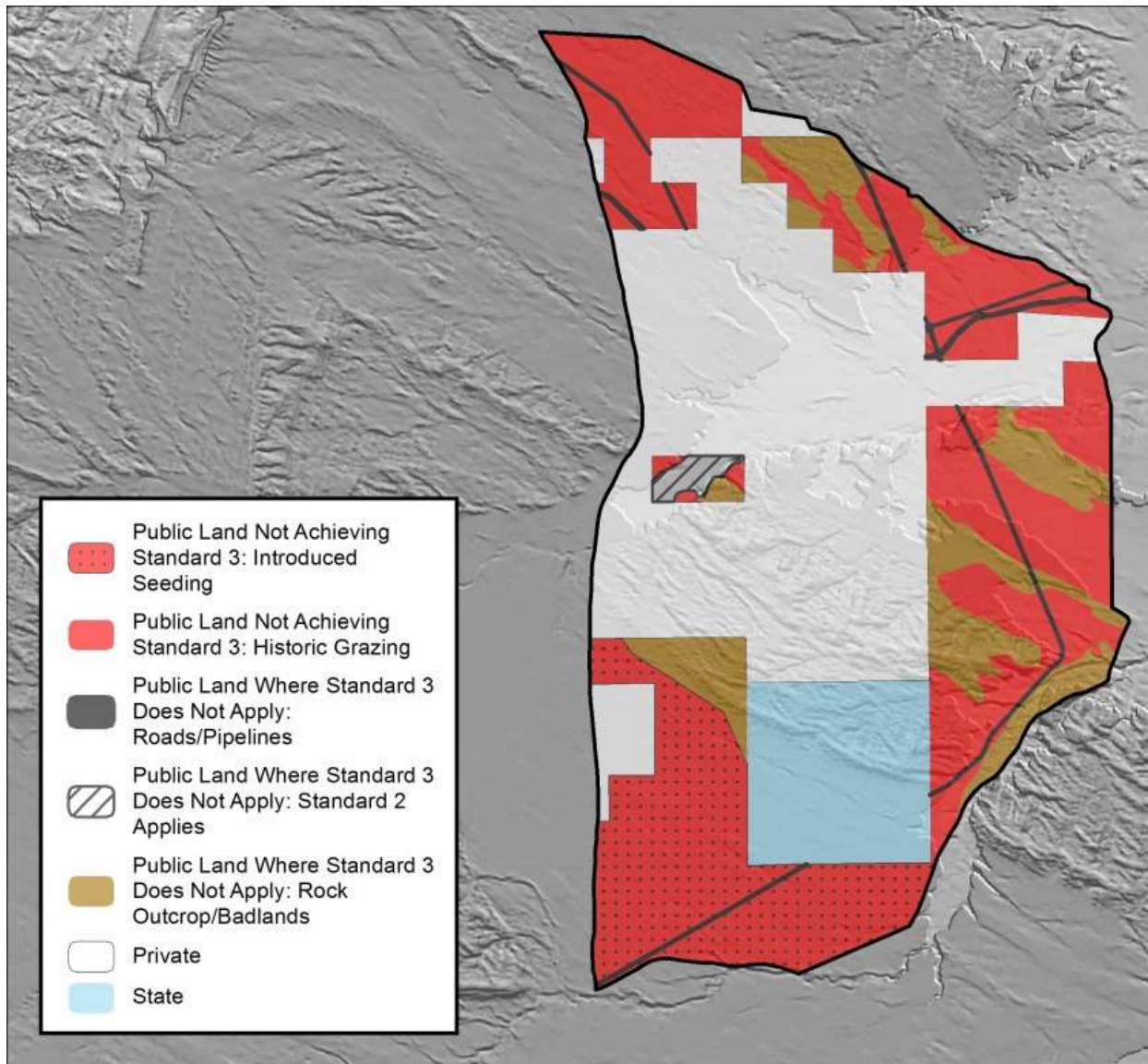
Wagonhound (Proposed West Pasture of Wagonhound)



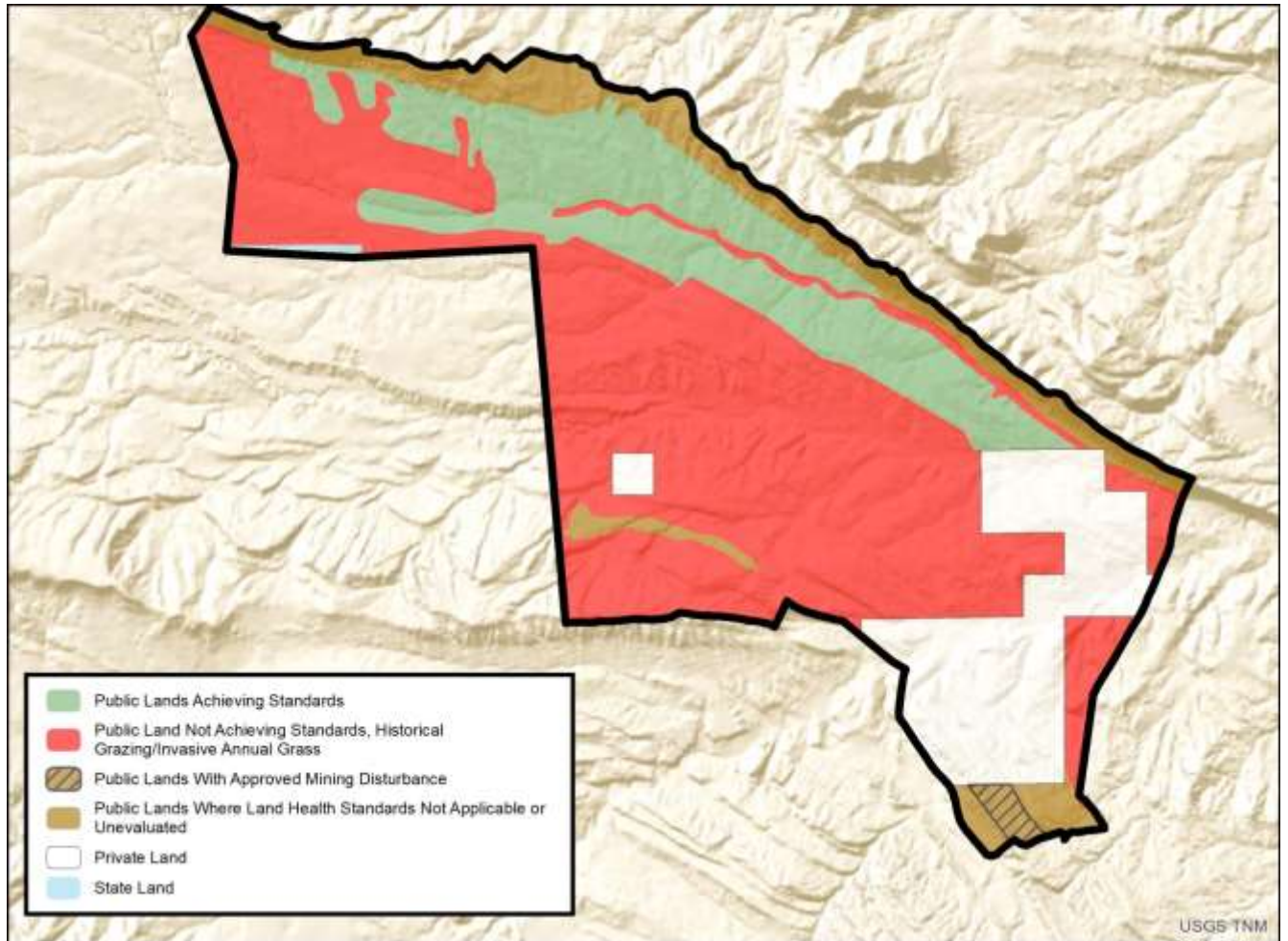
Wagonhound Bench (Proposed Middle Pasture of Wagonhound)



East Cottonwood

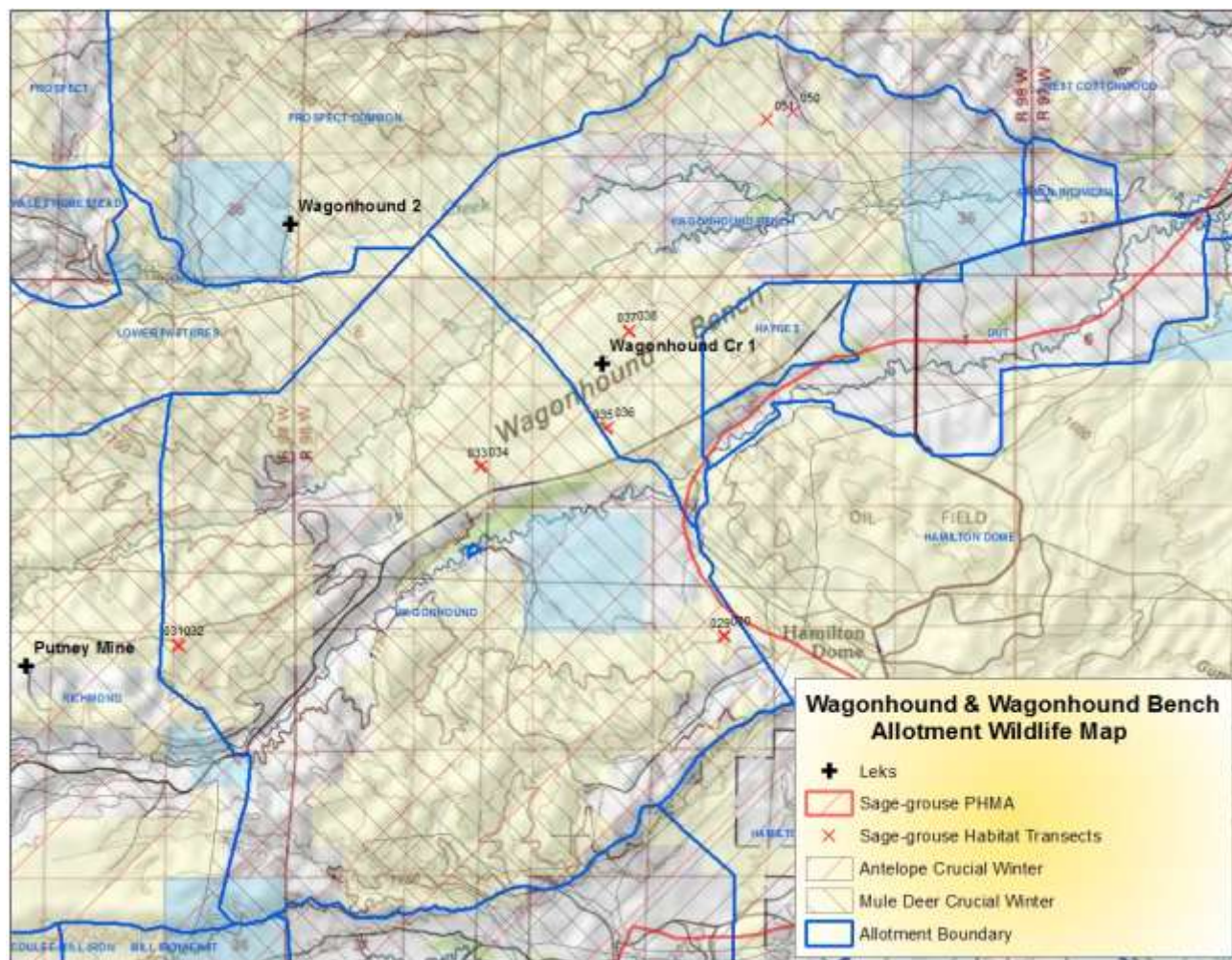


Coal Draw



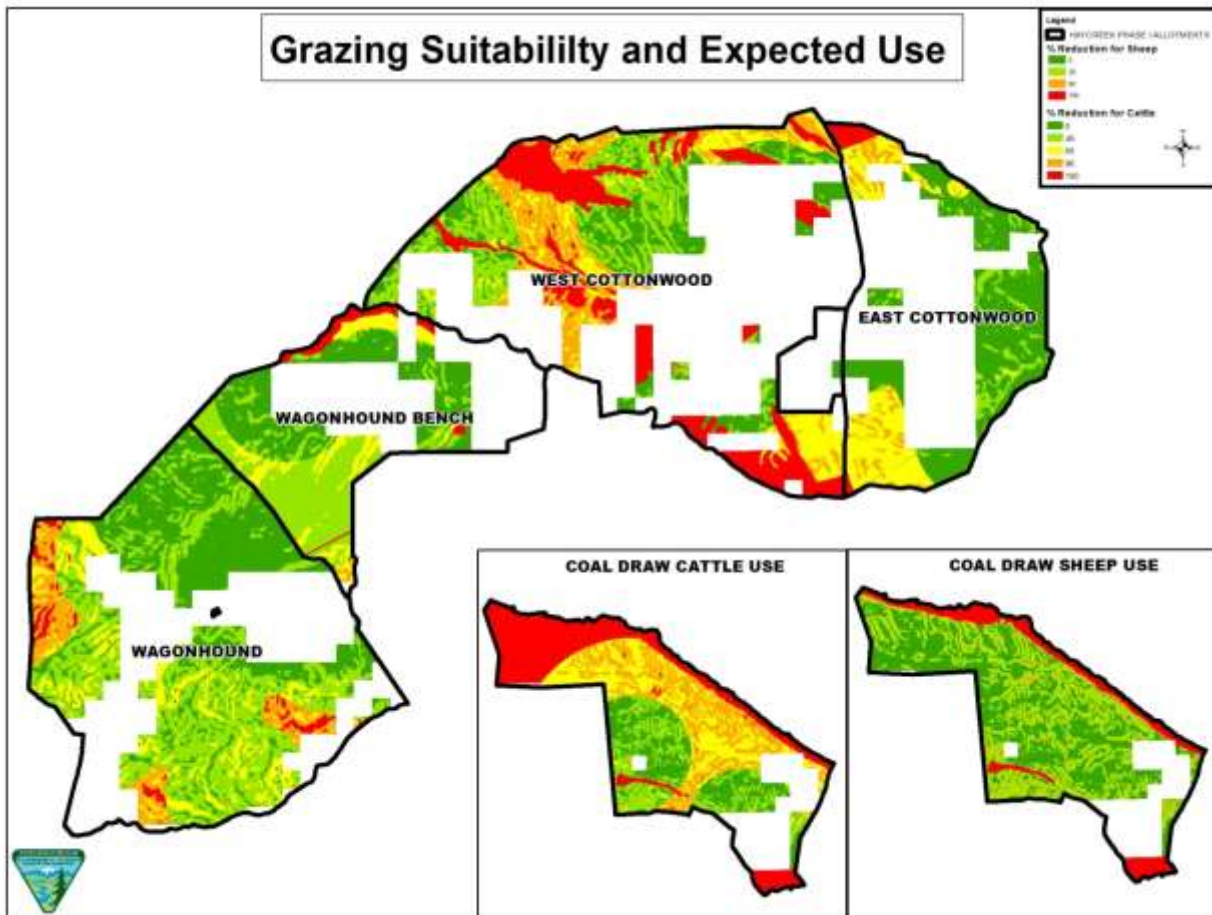
Map 4: Wildlife Resources







Appendix B: Suitability/Expected Use Maps



In order to better comprehend how percent slope and distance from water sources can attribute to limiting factors on grazing use, an ArcMap GIS analysis was used to develop an Expected Use pattern map. Analyzing percent slope and distance from water concurrently on spatial and visual bases helps illustrate a general prediction on the relative degrees of use that might occur within an Allotment or Pasture. In addition, each level of expected use in the allotment can be quantified by acres and a percent from total acres can be calculated. The calculated acreages can in turn be used as an aid for calculating stocking rates. In this case the levels of expected use were divided in to five different classes. The expected use categories are similar to the commonly used herbaceous utilization classes. Please keep in mind that the expected use classes are not met to be utilization definitions but rather a reference to available or accessible forage. The Expected Use classes are:

- **Unrestricted:** Concentration areas or thoroughfares that do not have any limiting factors and have 100 percent accessible forage.
- **Moderate:** Areas readily used but have some limiting factors with at least 40-60 percent accessible forage.
- **Light:** Areas with 20-40 percent accessible forage because of limiting factors.

- **Slight:** Areas that have casual use with 5-20 percent accessible forage because of limiting factors.
- **Incidental:** Areas that usually have negligible grazing because of longer distances from water or forage is unattainable because of slope steepness or rocky outcrops.

Several different layers are needed to produce a single coverage of expected use. The layers needed are: Allotment boundary, pasture boundaries, reliable water source points, and percent slope derived from a DEM raster.

Slope:

The percent slope coverage is made up of a succession of polygons created from a DEM raster layer and divided into ranges of percent slope from 0-10%, 10-30%, 30-60%, 60-100%. The percent slope layer is first clipped to the Allotment/Pasture boundaries and each polygon within the layer has acreages calculated for later use in determining the percent of acres within the expected use classes. The percent slopes are then grouped based on the guidelines by percent reduction in grazing capacity shown below (Holechek, 2011).

<u>Percent Slope</u>	<u>% Reduction in Grazing Capacity</u>
0-10	None
10-30	30%
30-60	60%
60 +	100%

Distance from Water:

Distance from water sources are derived by creating and adding a multiple ring buffer layer around the Points within the allotment/pasture. The Buffers are defined by distance in half mile increments up to at least 3 miles. The buffers are then classed based on commonly suggested guidelines of percent reduction in grazing capacity shown below (Holechek, 2011). These buffers are also clipped to the boundaries of the Allotment or Pasture.

<u>Distance From Water</u>	<u>% Reduction in Grazing Capacity</u>
0-1 mile	None
1-2 miles	50%
2-3 miles	100%

Combined Reduction Values:

To generate a separate layer that shows one coverage of expected use, the percent slope and buffered distances to water layers are joined by the union geoprocessing tool which is an overlay analysis that combines the overlapping spatial and attributes features of both layers. Once the new layer is created, its attributes table is used to run further calculations. The fields representing distance from water and the percent slope values are then assigned a percent reduction values taken from the two tables above. These reduction values are then added together into a new field that should give a range of numbers from 0 to over 100. These values can be divided and categorized into the five Excepted Use Classes shown below and further represented by the breakdown of symbology shown on the map.

<u>Limiting Values</u>	<u>Expected Use Class</u>	<u>Percent Reduction</u>
------------------------	---------------------------	--------------------------

In Grazing Capacity

0-29	Unrestricted	None
30-49	Moderate	45%
50-79	Light	65%
80-99	Slight	90%
100+	Incidental	100%

Percent of acres within each Expected Use Class can also be calculated from the attributes table by hand or through running statistical analyses. Suitable acres are calculated by subtracting the Percent Reduction Values from the Total Acres within each Use Class polygon.

Most Expected Use analysis represent use that would occur with cow/calf pairs in spring or hot season use with the worst case scenario for water availability. Other factors such as kind or class of livestock, season-of-use, natural or manmade barriers, and variation of water availability can also be adjusted into the percent reduction in grazing capacity and different variations of maps can be easily generated.

Suitable Acres with Stocking Rates:

Stocking rates can also be calculated in conjunction with the suitability analysis. Polygons based on the NRCS soil surveys can be cross-referenced with Range Site information. Based on monitoring data or professional judgment each Range Site is assigned an Ecological State and its recommended yearlong stocking rate from the NRCS Ecological Site Description. The Range Site and stocking rate polygon can then be unionized with the polygons of the expected use analysis.

Once the suitability and range site information is combined, the suitable AUMs within the pasture or allotment boundary is calculated by multiplying suitable acres with the recommended AUMs per acre stocking rate.

COAL DRAW SLOPE SUITABILITY-Sheep Use Only											
Ecological Site	Precipitation Zone	Ecological State	AUMs/Ac (NRCS 50% Use)	AUMs/AC proposed stocking rate	Percent Reduction	Use Class	Total BLM Acres	Suitable BLM Acres	Suitable AUMs (50% Use)	Expected Use Level	Suitable AUMs Proposed
Loamy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	0%	Unrestricted	387	387	77		70
Loamy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	30%	Moderate	228	160	32		29
Loamy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	60%	Light	8	3	1		1
Loamy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	100%	Incidental	0	0	0		0
Mining	10-14"	MINING	0	0.000	0%	Unrestricted	24	24	0		0
Mining	10-14"	MINING	0	0.000	30%	Moderate	27	19	0		0
Rock Outcrop	10-14"	RO	0	0.000	100%	Incidental	811	0	0		0
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	0%	Unrestricted	1828	1828	91		82
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	30%	Moderate	1294	905	45		41
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	60%	Light	35	14	1		1
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	100%	Incidental	2	0	0		0
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	0%	Unrestricted	699	699	119		107
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	30%	Moderate	832	583	99		89
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	60%	Light	24	10	2		1
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	100%	Incidental	0	0	0		0
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	0%	Unrestricted	80	80	14		12
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	30%	Moderate	261	182	31		28
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	60%	Light	10	4	1		1
TOTAL							6551	4899	512	45	461

COAL DRAW SLOPE/WATER SUITABILITY-Cattle Use Only

Ecological Site	Precipitation Zone	Ecological State	AUMs/Ac (NRCS 50% Use)	AUMs/AC Proposed Stocking Rate	Percent Reduction	Use Class	Total BLM Acres	Suitable BLM Acres	Suitable AUMs (50% Use)	Expected Use Level	Suitable AUMs Proposed
Loamy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	65%	Light	47	16	3		3
Loamy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	90%	Slight	32	3	1		1
Loamy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	100%	Incidental	545	0	0		0
Mining	10-14"	MINING	0	0.000	100%	Incidental	51	0	0		0
Rock Outcrop	10-14"	RO	0	0.000	100%	Incidental	811	0	0		0
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	0%	Unrestricted	1079	1079	54		49
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	45%	Moderate	786	432	22		19
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	65%	Light	635	222	11		10
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	90%	Slight	491	49	2		2
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	100%	Incidental	167	0	0		0
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	0%	Unrestricted	51	51	9		8
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	45%	Moderate	188	103	18		16
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	65%	Light	621	217	37		33
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	90%	Slight	769	77	13		12
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	100%	Incidental	278	0	0		0
TOTAL							6551	2251	169	45	152

EAST COTTONWOOD SLOPE/WATER SUITABILITY

Ecological Site	Precipitation Zone	Ecological State	AUMs/Ac (NRCS 50% Use)	AUMs/AC Proposed Stocking Rate	Percent Reduction	Use Class	Total BLM Acres	Suitable BLM Acres	Suitable AUMs (50% Use)	Expected Use Level	Suitable AUMs Proposed
Anthropogenic Disturbance	10-14"	Anthropogenic Disturbance	0	0.000	0%	Unrestricted	34	34	0		0
Reseeded	10-14"	Crested Wheatgrass	0.25	0.225	0%	Unrestricted	258	258	64		58
Reseeded	10-14"	Crested Wheatgrass	0.25	0.225	45%	Moderate	11	6	2		1
Reseeded	10-14"	Crested Wheatgrass	0.25	0.225	65%	Light	588	206	51		46
Reseeded	10-14"	Crested Wheatgrass	0.25	0.225	90%	Slight	126	13	3		3
Reseeded	10-14"	Crested Wheatgrass	0.25	0.225	100%	Incidental	21	0	0		0
Rock Outcrop	10-14"	Rock Outcrop	0	0.000	0%	Unrestricted	722	722	0		0
Saline Upland	10-14"	Gardner's Saltbush/Rhizomatous Wheatgrass	0.2	0.180	0%	Unrestricted	33	33	7		6
Saline Upland	10-14"	Gardner's Saltbush/Rhizomatous Wheatgrass	0.2	0.180	45%	Moderate	12	7	1		1
Saline Upland	10-14"	Gardner's Saltbush/Rhizomatous Wheatgrass	0.2	0.180	65%	Light	0	0	0		0
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	0%	Unrestricted	813	813	163		146
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	45%	Moderate	310	170	34		31
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	65%	Light	253	89	18		16
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	90%	Slight	127	13	3		2
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	100%	Incidental	108	0	0		0
TOTAL							3415	2362	345	45	311

WAGONHOUND EAST PASTURE SLOPE/WATER SUITABILITY

Ecological Site	Precipitation Zone	Ecological State	AUMs/Ac (NRCS 50% Use)	AUMs/AC Proposed Stocking Rate	Percent Reduction	Use Class	Total BLM Acres	Suitable BLM Acres	Suitable AUMs (50% Use)	Expected Use Level	Suitable AUMs Proposed
Loamy	10-14"	Blue Grama Sod	0.1	0.090	0%	Unrestricted	638	638	64		57
Loamy	10-14"	Blue Grama Sod	0.1	0.090	45%	Moderate	406	223	22		20
Loamy	10-14"	Blue Grama Sod	0.1	0.090	65%	Light	539	189	19		17
Loamy	10-14"	Blue Grama Sod	0.1	0.090	90%	Slight	237	24	2		2
Loamy	10-14"	Blue Grama Sod	0.1	0.090	100%	Incidental	64	0	0		0
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	0%	Unrestricted	540	540	162		146
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	45%	Moderate	976	537	161		145
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	65%	Light	326	114	34		31
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	90%	Slight	732	73	22		20
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	100%	Incidental	64	0	0		0
Rock Outcrop/Badlands	10-14"	Rock Outcrop/Badlands	0	0.000	100%	Incidental	1736	0	0		0
Saline Upland	10-14"	Gardner's Saltbush/Bare Ground	0.05	0.045	0%	Unrestricted	61	61	3		3
Saline Upland	10-14"	Gardner's Saltbush/Bare Ground	0.05	0.045	45%	Moderate	12	7	0		0
Saline Upland	10-14"	Gardner's Saltbush/Bare Ground	0.05	0.045	65%	Light	0	0	0		0
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	0%	Unrestricted	165	165	33		30
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	45%	Moderate	236	130	26		23
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	65%	Light	156	55	11		10
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	90%	Slight	189	19	4		3
Sandy	10-14"	Big Sagebrush/Bare Ground	0.2	0.180	100%	Incidental	6	0	0		0
TOTAL							7086	2775	564	45	507

WAGONHOUND MIDDLE PASTURE SLOPE/WATER SUITABILITY

Ecological Site	Precipitation Zone	Ecological State	AUMs/Ac (NRCS 50% Use)	AUMs/AC Proposed Stocking Rate	Percent Reduction	Use Class	Total BLM Acres	Suitable BLM Acres	Suitable AUMs (50% Use)	Expected Use Level	Suitable AUMs Proposed
Anthropogenic Disturbance	10-14"	Anthropogenic Disturbance	0	0.000	100%	Incidental	15	0	0		0
Loamy	10-14"	Blue Grama Sod	0.1	0.090	0%	Unrestricted	1138	1138	114		102
Loamy	10-14"	Blue Grama Sod	0.1	0.090	45%	Moderate	536	295	29		27
Loamy	10-14"	Blue Grama Sod	0.1	0.090	65%	Light	183	64	6		6
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	0%	Unrestricted	108	108	33		29
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	45%	Moderate	1011	556	167		150
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	65%	Light	253	88	27		24
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	90%	Slight	11	1	0		0
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	100%	Incidental	2	0	0		0
Rock Outcrop/Badlands	10-14"	Rock Outcrop/Badlands	0	0.000	100%	Incidental	187	0	0		0
Saline Upland	10-14"	Gardner's Saltbush/Bare Ground	0.05	0.045	65%	Light	12	4	0		0
Saline Upland	10-14"	Gardner's Saltbush/Bare Ground	0.05	0.045	90%	Slight	12	1	0		0
Saline Upland	10-14"	Gardner's Saltbush/Bare Ground	0.05	0.045	100%	Incidental	1	0	0		0
Water	10-14"	Water/Reservoir	0	0.000	0%	Unrestricted	9	9	0		0
TOTAL							3478	2265	376	45	339

WAGONHOUND WEST PASTURE SLOPE/WATER SUITABILITY

Ecological Site	Precipitation Zone	Ecological State	AUMs/Ac (NRCS 50% Use)	AUMs/AC Proposed Stocking Rate	Percent Reduction	Use Class	Total BLM Acres	Suitable BLM Acres	Suitable AUMs (50% Use)	Expected Use Level	Suitable AUMs Proposed
Anthropogenic Disturbance	10-14"	Anthropogenic Disturbance	0	0.000	0%	Unrestricted	45	45	0		0
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	0%	Unrestricted	100	100	30		27
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	45%	Moderate	145	80	24		22
Loamy	10-14"	Perennial Grass/Big Sagebrush	0.3	0.270	65%	Light	1	0	0		0
Reseeded/Contour Furrowed	10-14"	Crested Wheatgrass/Blue grama/Sandberg bl	0.25	0.225	0%	Unrestricted	747	747	187		168
Reseeded/Contour Furrowed	10-14"	Crested Wheatgrass/Blue grama/Sandberg bl	0.25	0.225	45%	Moderate	27	15	4		3
Reservoir	10-14"	Reservoir/Water	0	0.000	0%	Unrestricted	5	5	0		0
Rock Outcrop/Badlands	10-14"	Rock Outcrop/Badlands	0	0.000	65%	Light	72	25	0		0
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	0%	Unrestricted	767	767	38		35
Saline Upland	10-14"	Gardner's saltbrush/Bare Ground	0.05	0.045	45%	Moderate	267	147	7		7
Sandy	10-14"	Perennial Grass/Mixed Shrub	0.07	0.063	0%	Unrestricted	126	126	9		8
Sandy	10-14"	Perennial Grass/Mixed Shrub	0.07	0.063	45%	Moderate	102	56	4		4
Sandy	10-14"	Perennial Grass/Mixed Shrub	0.07	0.063	65%	Light	13	4	0		0
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	0%	Unrestricted	935	935	159		143
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	45%	Moderate	2493	1371	233		210
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	65%	Light	910	319	54		49
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	90%	Slight	672	67	11		10
Shallow Loamy	10-14"	Perennial Grass/Mixed Shrub	0.17	0.153	100%	Incidental	227	0	0		0
Shallow Sandy	10-14"	Threadleaf sedge Sod	0.1	0.090	0%	Unrestricted	214	214	21		19
Shallow Sandy	10-14"	Threadleaf sedge Sod	0.1	0.090	45%	Moderate	288	158	16		14
Shallow Sandy	10-14"	Threadleaf sedge Sod	0.1	0.090	65%	Light	15	5	1		0
TOTAL							8170	5187	799	45	719

Appendix C. Proposed Action Other Terms and Conditions

- Livestock number may vary in each pasture or allotment so long as grazing is within authorized period and active AUMs are not exceeded
- Utilization should not exceed 50% based on an average of several sites throughout the pasture/allotment or through use pattern mapping using BLM approved methods. If use exceeds 50% in 2 consecutive years the BLM will coordinate with the permittee to reduce grazing in the third year to be under the 50% use level.
- Sheep or Cattle use may be made in the Coal Draw allotment but use may be made only by one kind during the annual use period of 10/16-3/31. The following Mandatory Terms and Conditions will apply to cattle use in Coal Draw as analyzed in DOI-BLM-WY-R010-2016-0009-EA:

Number/Kind	Dates	%Public Land	Active AUMs
69 Cattle	3/1 – 3/31	40	28
69 Cattle	10/16 – 2/28	40	123